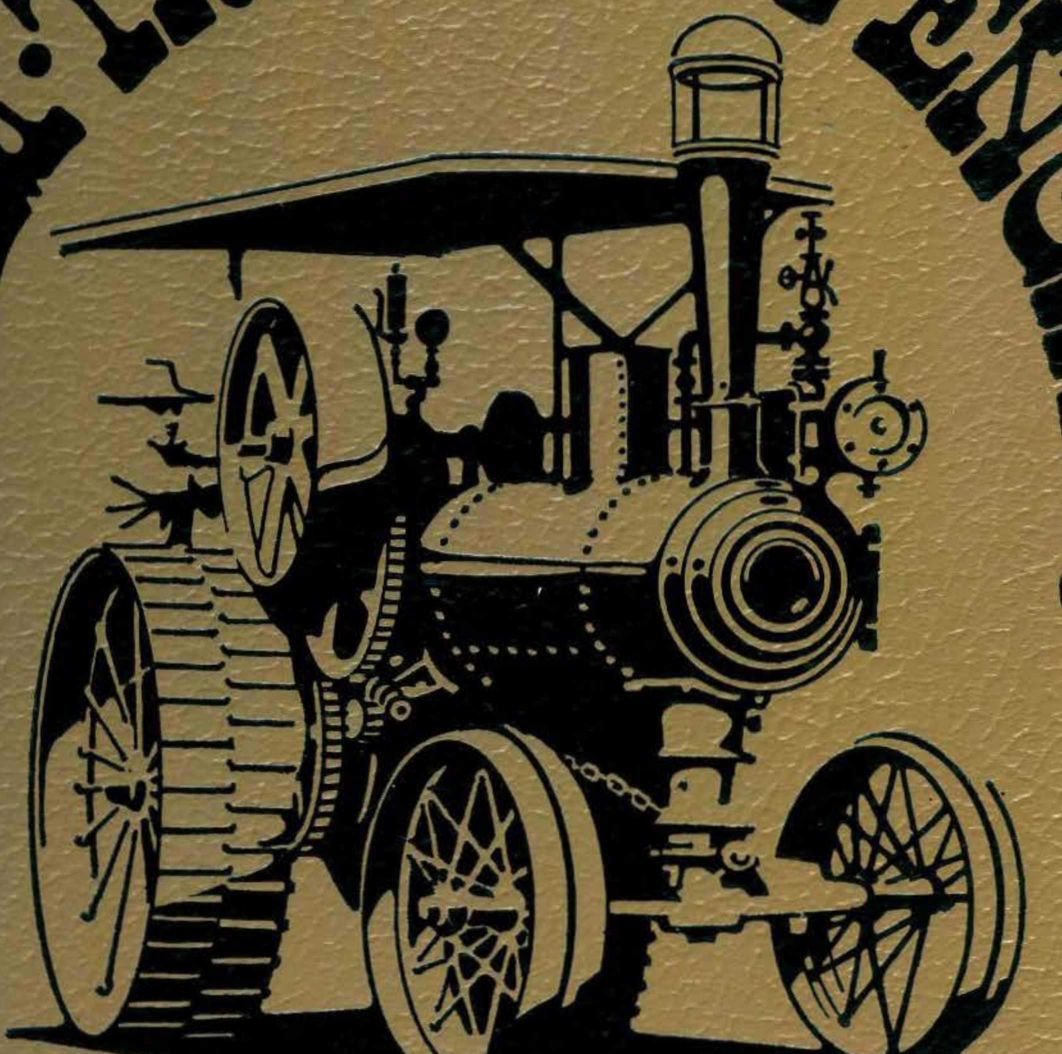
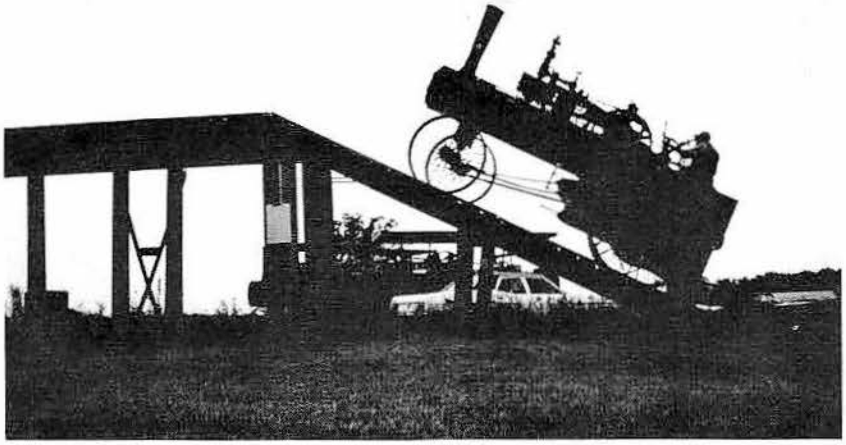
ENCYCLOPEDIA OF AMERICAN STEAM TRACTION ENGINES



JACK NORBECK



ENCYCLOPEDIA OF AMERICAN STEAM TRACTION ENGINES

By Jack Norbeck

Editing and Design

By George H. Dammann

Third Revised Edition

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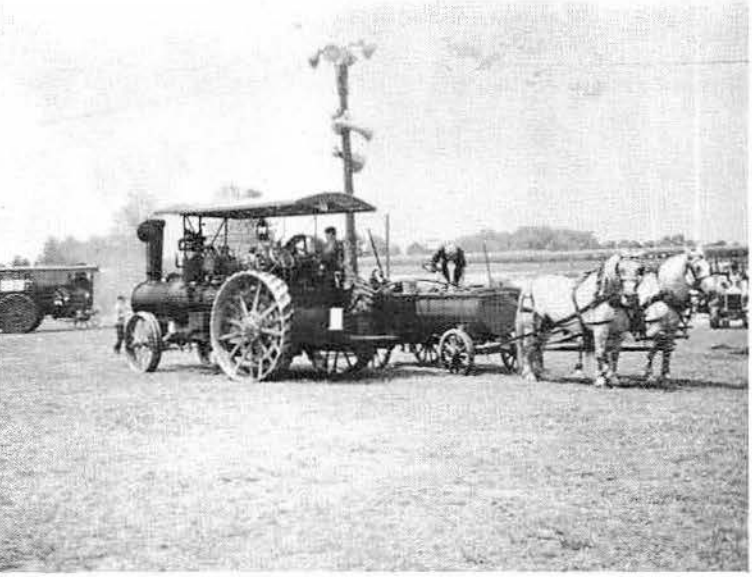

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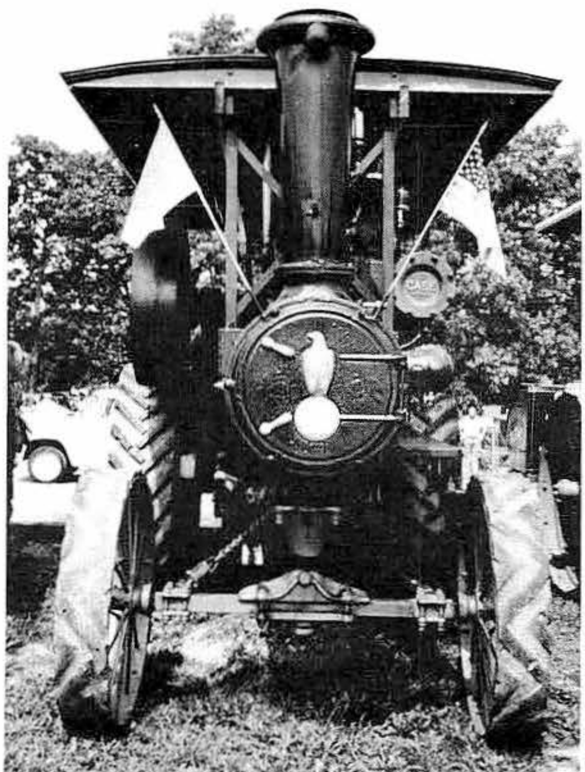

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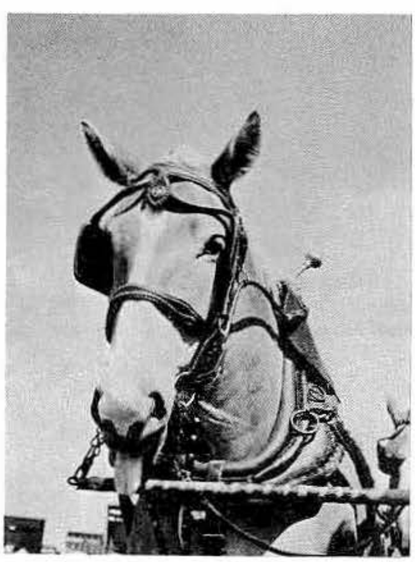
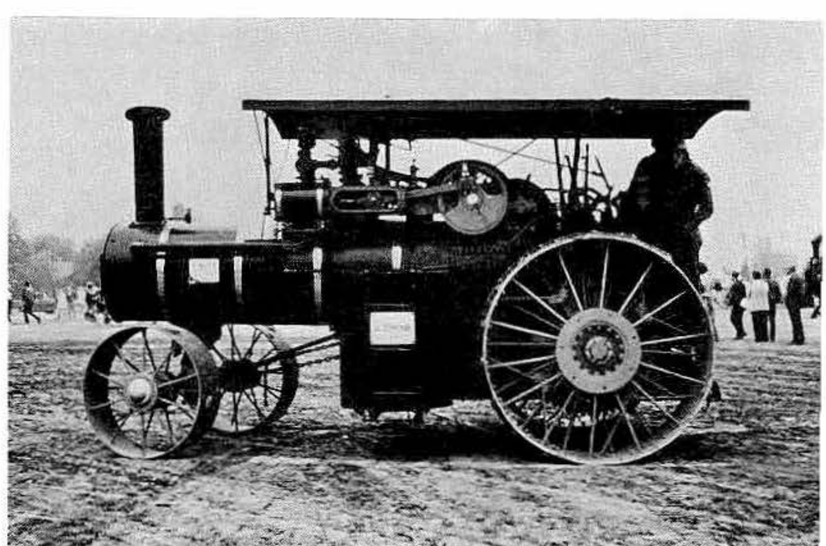




FOREWORD

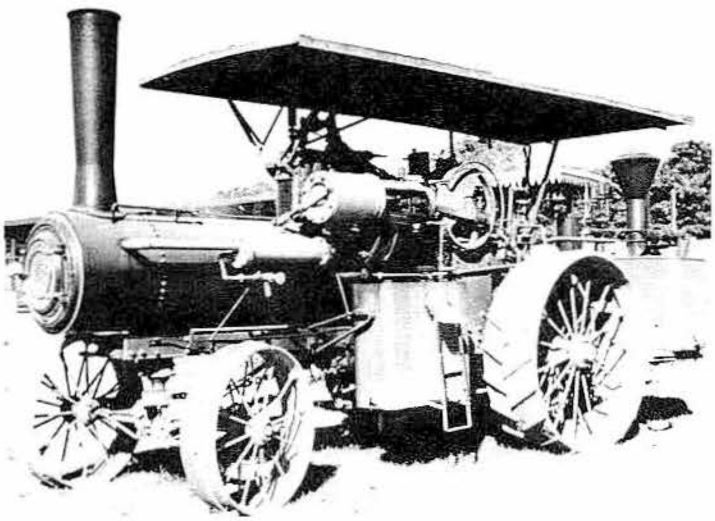
Many kinds of power have been invented since steam came into use. But to many, steam engines will never be forgotten. And the younger generation gets a thrill out of watching the operators reversing the engine, blowing the whistle, turning on the injector, and belting up to the grain thresher.

Most of the older folks who are still living today, who spent their lifetime with steam engines, are familiar with all the different makes of engines that were manufactured in the United States and Canada. The steam traction engine reached the heights of its glory around 1910. They were all built along the same line, but no two looked alike. Many of the early ones had the flywheel on left and steering on right; others had the flywheel on right and steering on left. Some had return flue boilers; some had upright boilers. A small number had four wheel drive. The early ones had one row of rivets in the barrel of the boiler and carried from 80 to 100 lbs. pressure.

Around 1915 when most manufacturers diverted to double butt strap boilers, the pressure was increased to 150 lbs. Some carried 180. This increased the power tremendously. Those latter day engines were well built and were in use up into the early Twenties, when the kerosene tractors started for a takeover. But many folks kept on with steam as it had been their life work, and they had never been associated with any kind of power that was any more reliable.

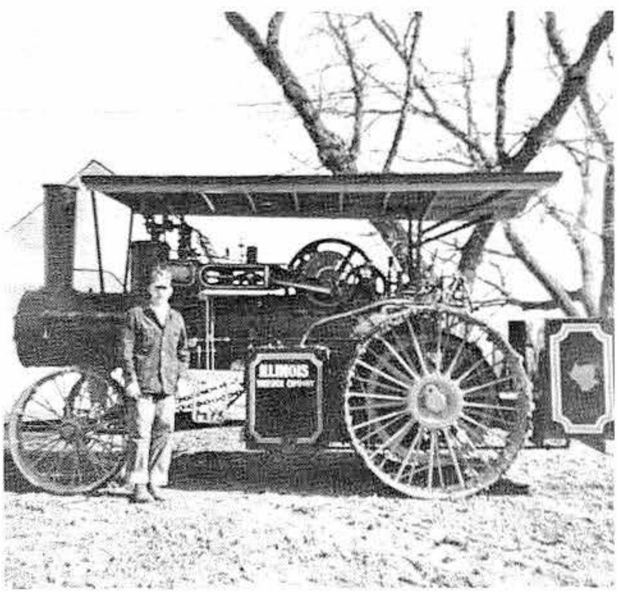
The first traction engine I fell in love with was a 12 H.P. Scheidler built by the Scheidler Machine Works of Newark, Ohio. It was built in the early 1890s, and had a brake on the flywheel and a steam chest facing the left front wheel. A water glass was near the front of the boiler, and no soft plug was in the crown sheet. I was so enthused by it, I can still remember every rivet in it. So my mind was completely concentrated on traction engines until I got old enough to run one. Today, if I just saw nothing but the rear wheel of one, I could very easily tell what company manufactured it.

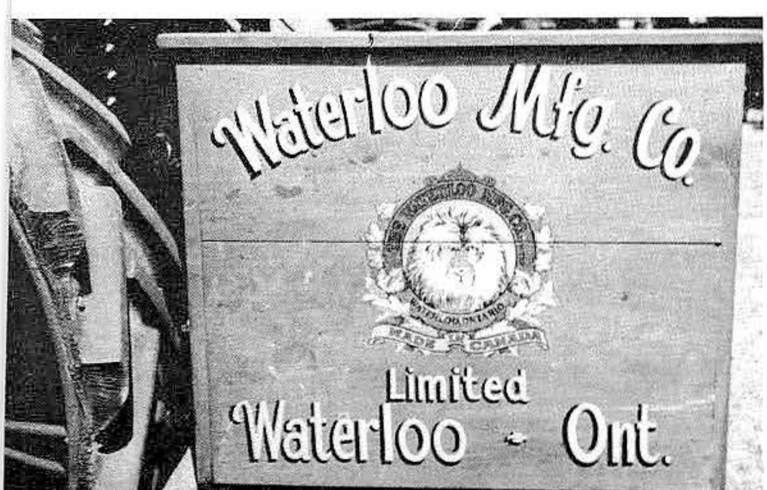
Raymond Laizure
Founder
The Stumptown Steamer Magazine



Dedication

This album is a tribute to the men and women, young and old, who are expanding their sustained interest, skills and enthusiasm in preserving an important part of North American agricultural history, namely, the steam traction engine and draft horse. We salute the early junk yard explorers! They should be recorded as farm aristocrats in agricultural history books. To them the hiss and purr of a steam traction engine is more than a machine. It is a thing of beauty and lots of fun, pampered with tender masculine loving care!





Introduction

This album presents a collection of North American steam traction engines that are operational today plus information about the makes with no examples in existence today.

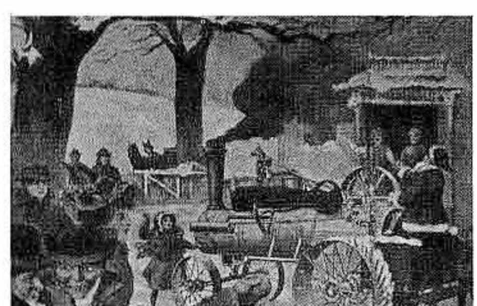
The steam traction engine created a present-day army of steam buffs who enjoy the excitement of firing a boiler with straw, wood or coal; who concentrate on gauges and gear shifts, and above all, listen to the throbbing rhythmic sound of a steam engine. The army includes a sizeable group of armchair steam traction engine enthusiasts. The smoke, smell and sound of a steam engine show has converted a growing group of unsuspecting first-time spectators into avid lifetime steam power addicts.

Hundreds of U. S. and foreign steam traction engine owners have rescued junked engines and restored them to perfect condition. They proudly display and operate them at cross-country club events and farm shows. Professional and amateur mechanics have perfected unbelievable restorations from the smallest 6 H.P. to the largest 140 H.P. engine. This album is encyclopedic in scope with authenticated classification for each engine. It is the only work of its kind that features steam traction engines that are operational today.

Like antique auto price tags, the dollar value of restored steam traction engines is creating a constantly soaring market value.

It is our hope that this album will meet the need for a concise, dependable record of the important aspects of the steam traction engine.

Jack C. Norbeck
Coplay, Penn.



The Draft Horse

No single date or decade can be fixed as the start of the agricultural revolution through technology. But it is clear that the revolution in agricultural work methods and productivity per man got under way about the middle of the 19th century with the development of several new types of machines for use with horses.

Many experimenters during the first half of the 19th century sought better horse-drawn tillage implements and horse-powered machines to replace hand labor in planting and harvesting crops.

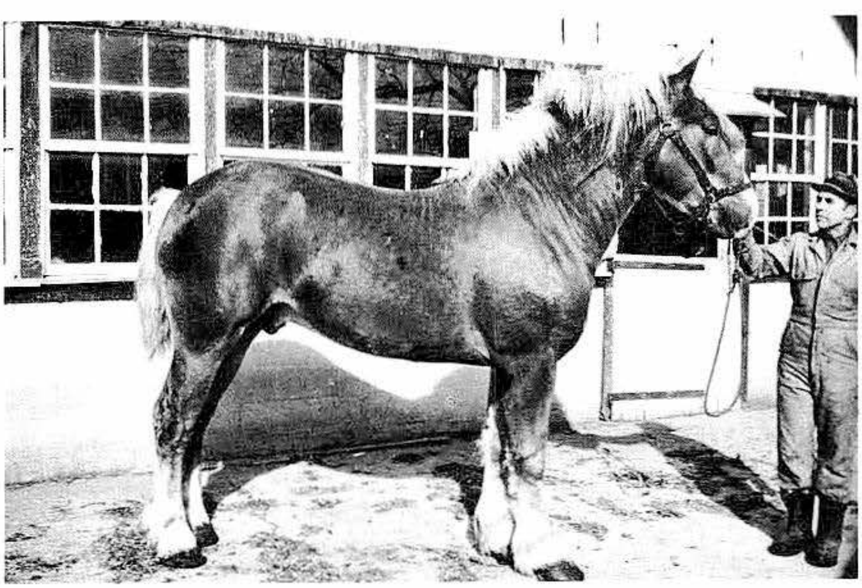
Shortage of labor and high grain prices during the Civil War speeded up the adoption of machine methods, especially for harvesting small grains. The numbers of horses and mules rose rapidly during the next half century.

Agriculture, as it advanced in waves of settlement across the American continent, surged up to an unprecedented level of productivity, derived from new technologies based on the use of horses and mules and the fertility of new soils.

That development did not end suddenly, but the virtual end of that era may be identified as the First World War or the years immediately after.

Horse and mule numbers at that time were the highest in U. S. history—more than 25 million were being used in this country.

Belgian



Elmer D. Lapp of Kinzer, Pa., has this 2-year old Belgian stallion named Rosco. Rosco is about 1,900 lbs. He won the red ribbon at the 1975 Pennsylvania state farm show. The Belgian draft horse, as the name indicates, originated and was developed in Belgium.

The Belgian draft horse, as the name indicates, originated and was developed in Belgium. It is still the only breed of horse which is bred to any extent in that country; the light horses used in Belgium being purchased largely in other countries. In 1886, the Belgian Draft Horse Society was organized for the purpose of encouraging the breeding of the native draft horse and to maintain a studbook for the breed.

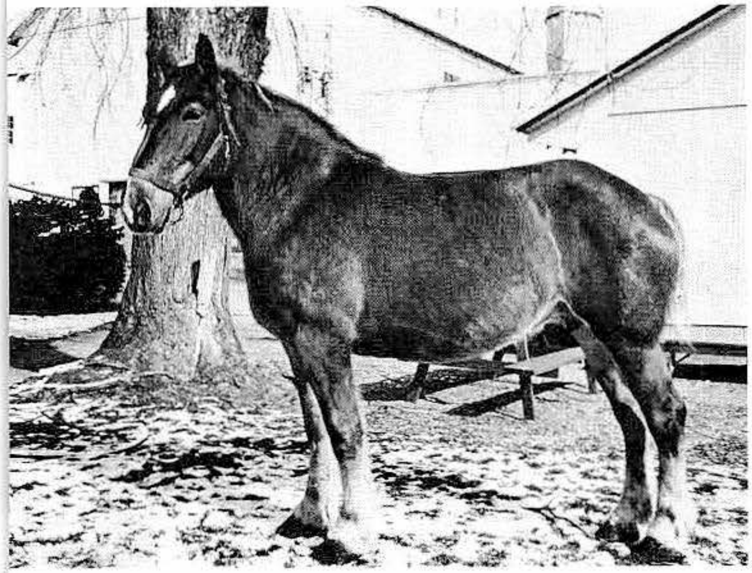
Importations of these horses into the United States were made more or less frequently during the last half of the Nineteenth century, but it was not until the beginning of the Twentieth century that they were imported in large numbers. The early trade was principally a stallion trade, but later quite large numbers of mares were also imported. Mature stallions in fair condition, weighing a ton or more are comparatively common.

The colors common to the Belgian are bay, chestnut, and roan, but browns, grays, and blacks are occasionally seen.

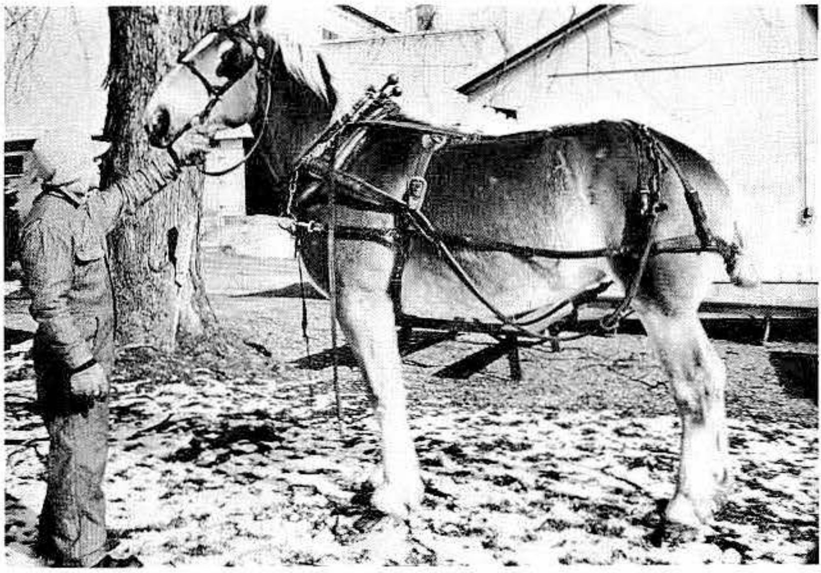
In the U. S., the Belgian sire has been valuable in improving the draft conformation of horse stock, particularly when mated with rangy, loosely coupled mares. The breed has made wonderful progress in this country, considering that it has attracted much attention only since the beginning of the Twentieth century. In fact no breed of horses has shown a greater increase in popularity and a greater improvement during this period.

The American Assn. of Importers and Breeders of Belgian Draft Horses was organized in 1887, but the first volume of its studbook was not published until 1905.

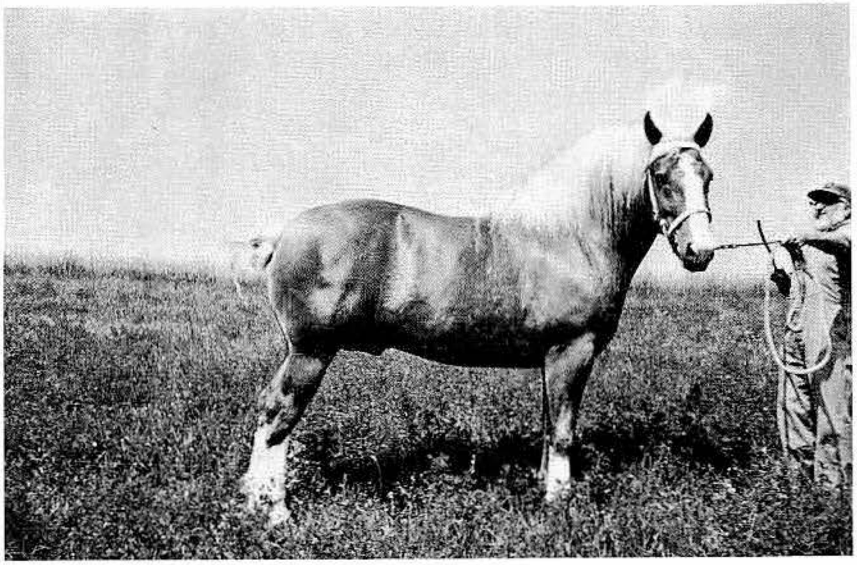
Belgian



Elmer D. Lapp's 9-year old Belgian mare is named Cam. Cam is about 1,800 lbs. She won the blue ribbon at the 1975 Pennsylvania state farm show. The Lapp's farm is in Kinzer, Pa. Mr. Lapp is a breeder of champion Belgians, and a dairy farmer.

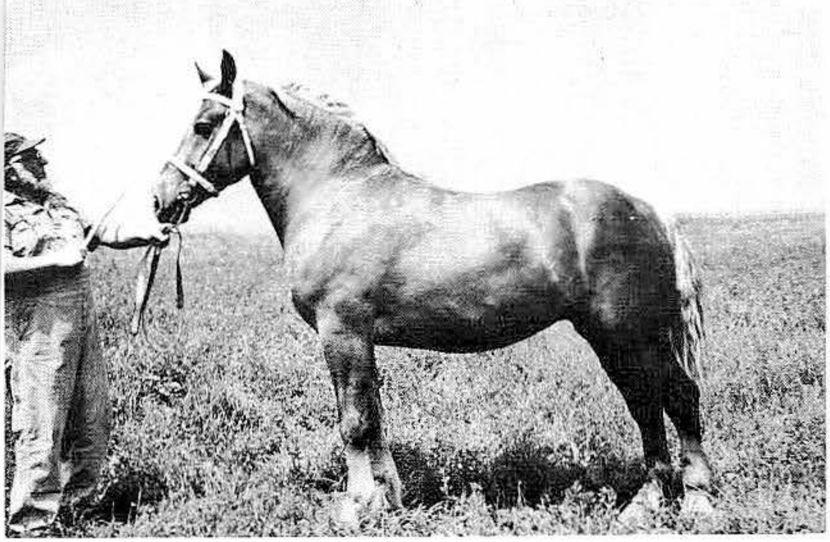


This 3-year old Belgian mare, Floss, weighs about 1,900 lbs. She is harnessed for work. The Draft Horse harness consists of (from left to right) bridle, collar, saddle and breechings.



Harvey W. Rice's 5-year old Belgian stallion is named Scooter, but his nickname is King. King is about 2,150 lbs., and is a blue ribbon stallion. Harvey Rice has been breeding Belgian horses for many years at his farm in Prospect, Pa.

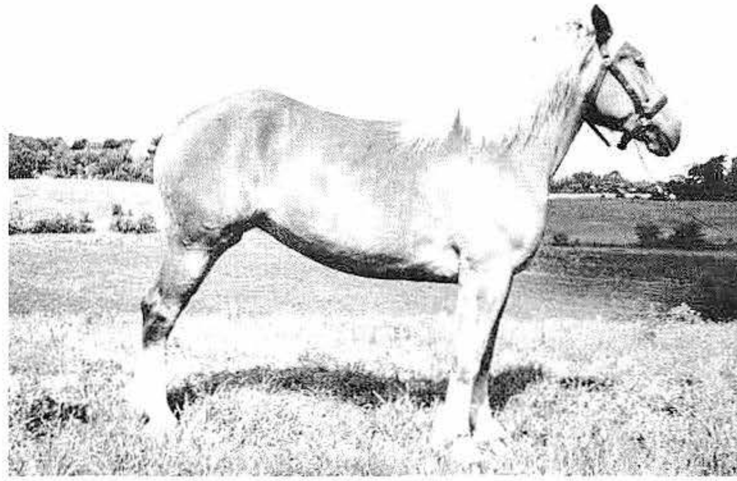
Harvey Rice's 4-year old Belgian mare is named May Farceur. She is about 2,000 lbs. Rice has been breeding prize Belgian horses for many years.



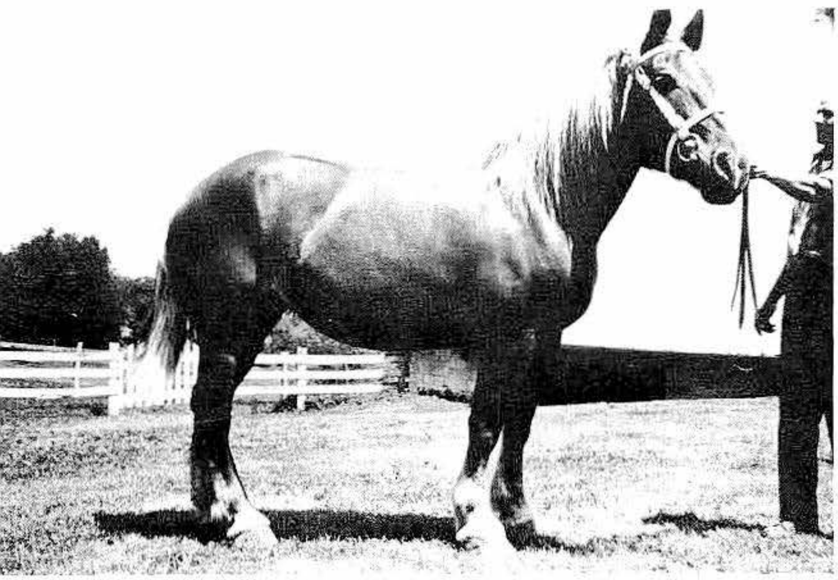
This is Elmer Lapp's herd of yearling Belgian studs and mares. The Belgian Draft Horse Corp. of America reports that 1,210 horses were recorded in the stud book in fiscal 1974 . . . the first time an American draft horse association has recorded over a thousand head for 30 years. In 1944, Belgian registrations totaled 1,337 and Percherons 1,211. The following year both dropped under the 1,000 figure and 1974 marked the first time in three decades that the four figure mark has again been reached by an American draft horse recording society.

Belgian

John DuPuis Jr.'s 8-year old Belgian stallion, Pinellas Buckeye, is about 2,000 lbs. Mr. DuPuis Jr. owns the Bard-D-Ranch at Port Mayaca, Fla.

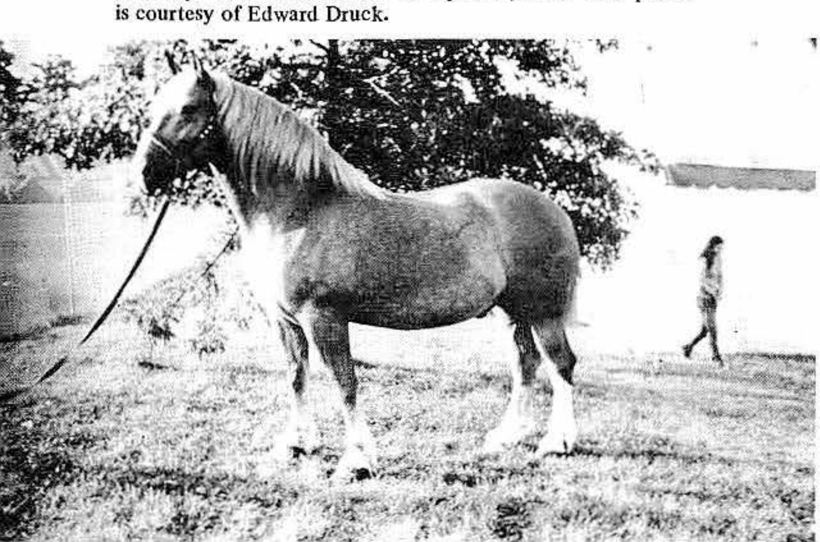


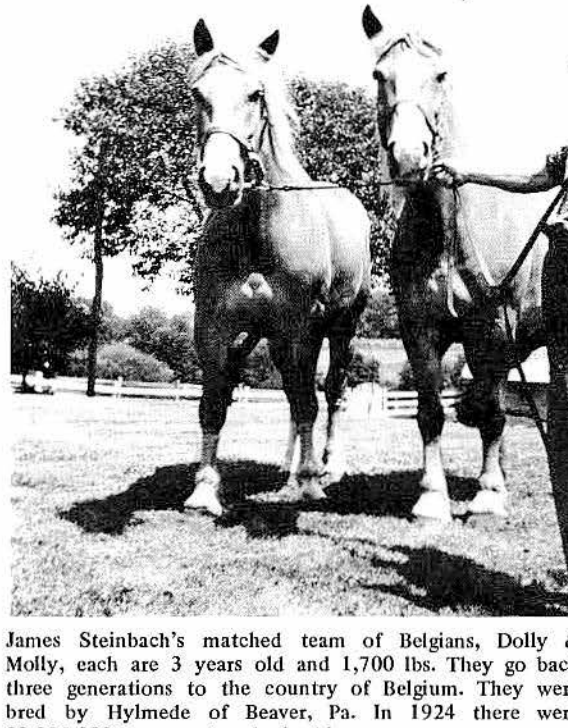
Donald Wack's 3-year old Belgian mare, Betty-Bell-Conqueror, is about 1,800 lbs. Donald Wack is a member of the Pennsylvania Horse and Mule Assn. He lives on the Senech Valley Farm, Zelienople, Pa.



This is Big John, a giant Belgian gelding horse, weighing 2,740 lbs. and standing 19.2 hands high at the withers. In plain talk, he is 8½ feet high from the floor to his ears, and 10½ feet long from his nose to his tail. He is probably one of the largest horses in the world. John is exceptionally strong, but extremely gentle. He has an enormous appetite, eating 2 bales of hay and 30 quarts of oats each day. However, Big John is not fat or overweight, but is in good conformation. Mr. Randall, owner of Big John, searched throughout the United States, Canada, England, Scotland, France, Belgium, Australia and New Zealand for such a horse, placing advertisements in leading Horse and Farm Magazines. John was the largest horse he could find and buy. The Randalls live in Wyckoff, N. J. This photo is courtesy of Edward Druck.

James Steinbach's 7-year old Belgian mare Sue is about 2,150 lbs. Mr. Steinbach lives in Rochester, Pa., where he raises Belgian horses. The American Assn. of Importers and Breeders of Belgian Draft Horses was organized in 1887, but the first volume of its studbook was not published until 1905.





James Steinbach's matched team of Belgians, Dolly & Molly, each are 3 years old and 1,700 lbs. They go back three generations to the country of Belgium. They were bred by Hylmede of Beaver, Pa. In 1924 there were 23,285,000 horses and mules in this country.

Clydesdale

The Clydesdale originated and was developed in Scotland and is practically the only draft horse found or favored in that country. The breed is of mixed origin, and its early history is more or less obscure.

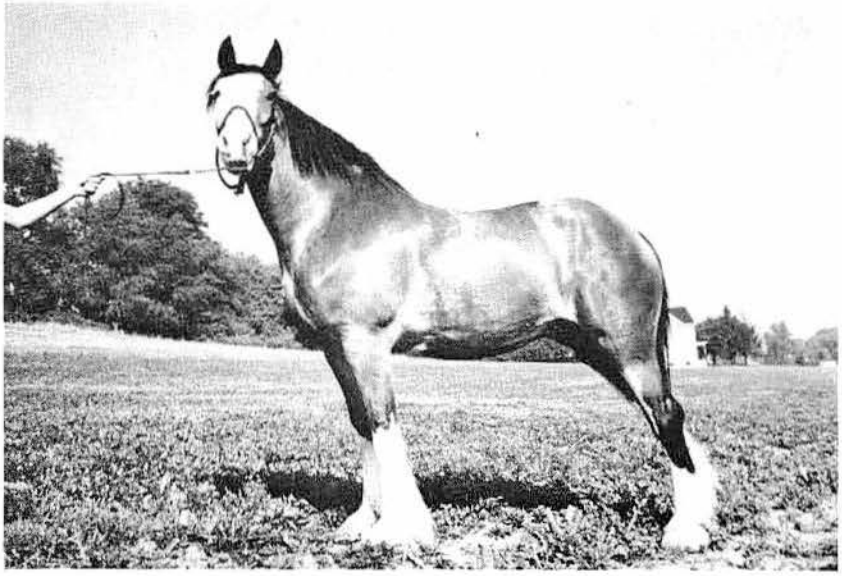
In the formation of the breed and during the early stages of the breed's development, however, it is probable that the blood of both Flemish and English horses was quite prominent. But for a large number of years the Clydesdale has been bred pure. In 1878 the Clydesdale Horse Society of Great Britain and Ireland was organized.

The first Clydesdales brought to North America were probably imported into Canada by the Scotch who settled there.

In the early 1870s, Clydesdales were imported into this country both through Canada and by direct importation. By 1880 they were being imported in large numbers, and these importations continued for several years.

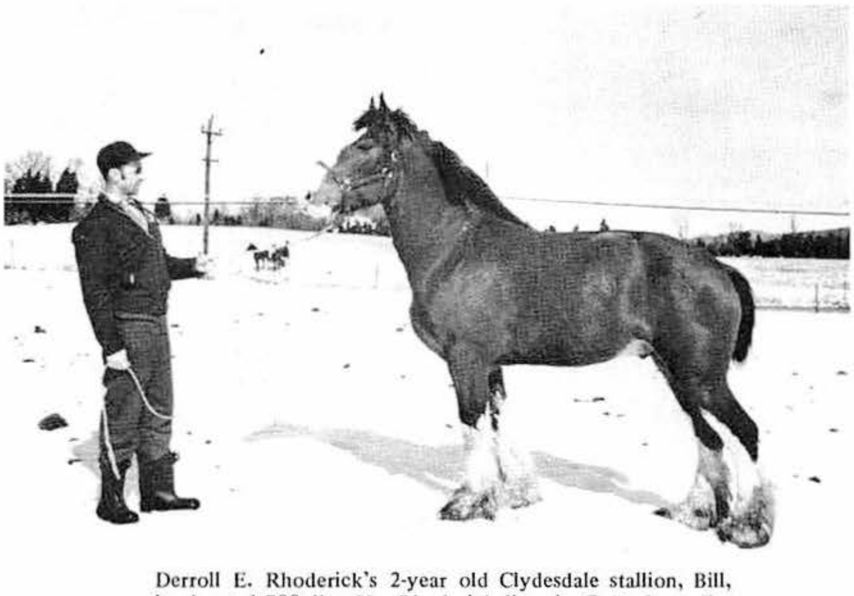
No other draft breed equals the Clydesdale in style and action. In the U. S., Clydesdale geldings have been very popular in the cities for use by those who want draft horses with a good, long, snappy, ground-covering stride and at the same time possessing style and action. Native mares of draft character bred to Clydesdale stallions have produced many excellent animals.

The Clydesdale Breeders Assn. of the U. S. was organized in 1879, and up to February 1, 1934, had issued 21 volumes of the American Clydesdale Studbook.



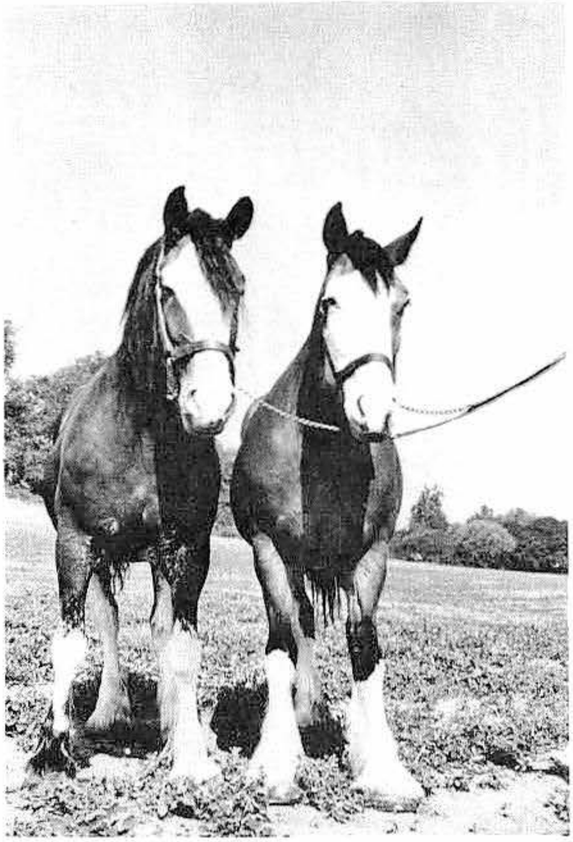
Floyd R. Johnston's 7-year old Clydesdale mare, Sweet Holly, is about 1,700 lbs. This picture was taken at the Johnston Dairy Farm, Monroeville, Pa. The Johnstons are dairy farmers and they raise Clydesdale horses.

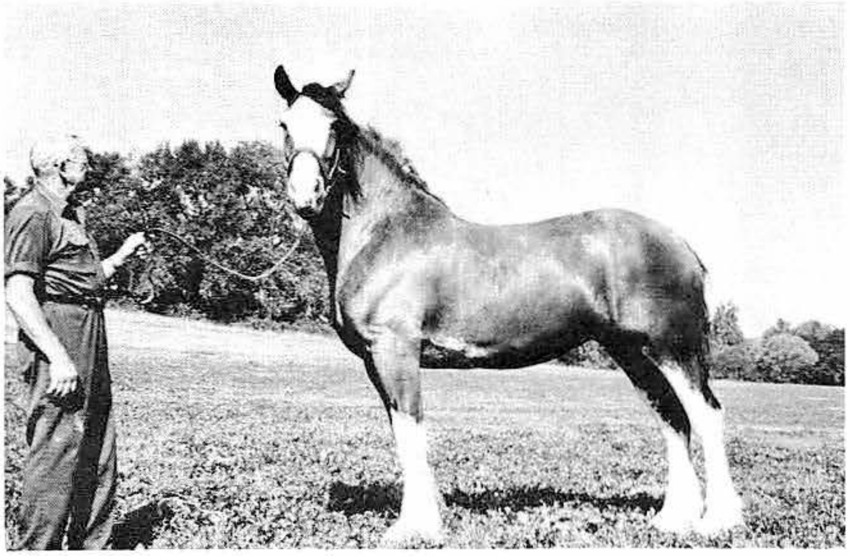
Anheuser-Busch's Clydesdale mare is named Bardrill May Morn. Bardrill May Morn is about 1,850 lbs. She was a champion at the time this picture was taken by Anheuser-Busch. In 1878, the Clydesdale Horse Society of Great Britain and Ireland was organized.



Derroll E. Rhoderick's 2-year old Clydesdale stallion, Bill, is about 1,700 lbs. Mr. Rhoderick lives in Gettysburg, Pa. He raises beef cattle and Clydesdales. The Clydesdale originated and has been developed in Scotland, and is practically the only draft horse found or favored in that country.

Clydesdale

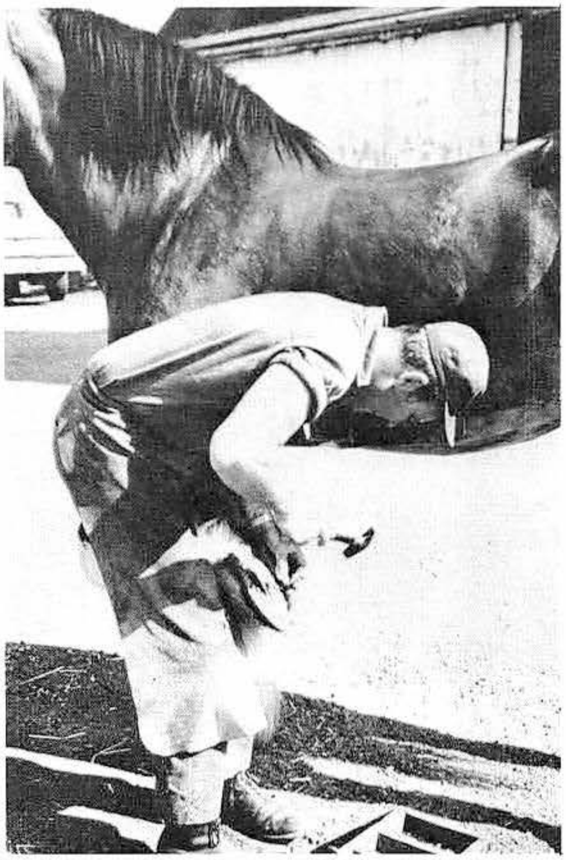




The Johnston's 6-year old Clydesdale mare Collissie Celia is about 1,700 lbs. This picture was taken at the Johnston Dairy Farm, Monroeville, Pa.

Floyd R. Johnston's matched team of Clydesdale mares are named Sweet Holly and Collissie Celia. Sweet Holly is 7 years old and Collissie Celia is 6 years old. They are about 1,700 lbs. each. The Clydesdale Breeders Assn. of the United States was organized in 1879, and up to February 1, 1934, had issued 21 volumes of the American Clydesdale Studbook.

Sweet Holly poses among the pine trees on the Johnston farm in Monroeville, Pa. The Clydesdale is known for style and action, prompt walk with a good, long, snappy stride, and a sharp trot. Hocks well flexed and carried close together are characteristics of this breed.



Mr. Johnston is shoeing one of his Clydesdale mares. Holding the horse is Mr. Johnston's father. Johnston shoes all his own horses, as today there are not many blacksmiths who will shoe draft horses.

Percheron

The Percheron originated in France and has been developed in a small district in the northwestern part of that country known as Perche. This district is about one-fifteenth the size of the State of Iowa, and only Percherons born within its boundaries are eligible to registry in the Percheron Studbook of France. Percheron foals, to be accepted for registry in the French book, must be registered during the year of their birth. Prior to such registration they must be examined by an official appointed by the Percheron Horse Society of France, who takes a careful description of their color and markings and brands them on the neck with the letters "S.P" enlaced.

The Percheron Horse Society of France was organized in 1883, and in addition to looking after the registration of Percherons, it holds an annual summer show in the Percheron district.

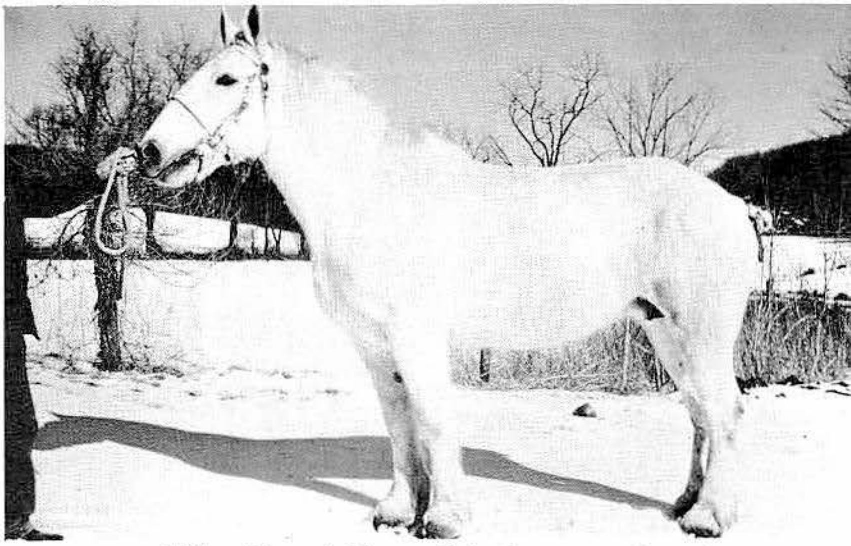
The Society also offers prizes at other shows. The improvement of the Percheron and other breeds in France is due to both public and private efforts. The government has for a number of years maintained studs in which selected animals have been kept for breeding purposes. In addition, subsidies are granted to private individuals in order to keep high class in the stud. Stallions intended to stand for public service in France must be examined by officials appointed by the government and certified as being free from periodic ophthalmia or moon blindness, and roaring (thick wind).

The introduction of Percheron horses into the United States dates back many years. One of the early stallions brought to this country which exerted considerable influence on local draft stock was Louis Napoleon, imported in 1851 by an Ohio firm. Other Percherons were imported about this time and during succeeding years. During the early 1870s, they were imported in large numbers, and these importations have continued to the present time.

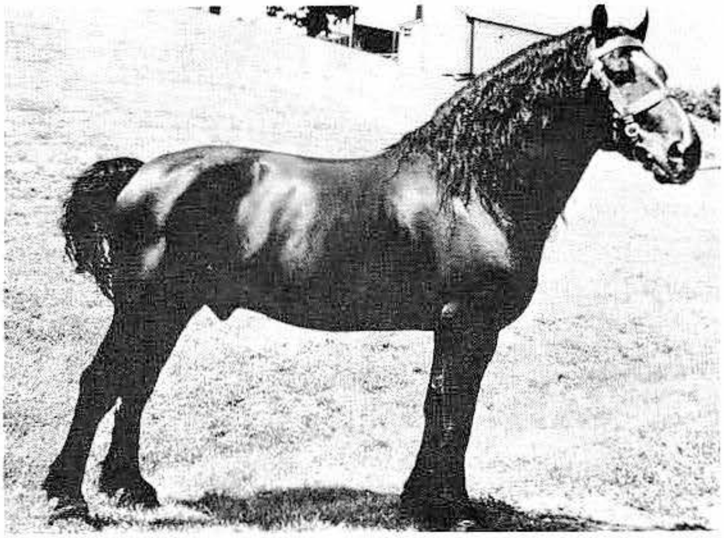
The distribution of the Percheron in this country is very widespread, and for years it has been one of the favorite draft horses.

In 1876 the National Assn. of Importers and Breeders of Percheron-Norman Horses was organized. The Percheron Horse Assn. of America is an outgrowth of that association.

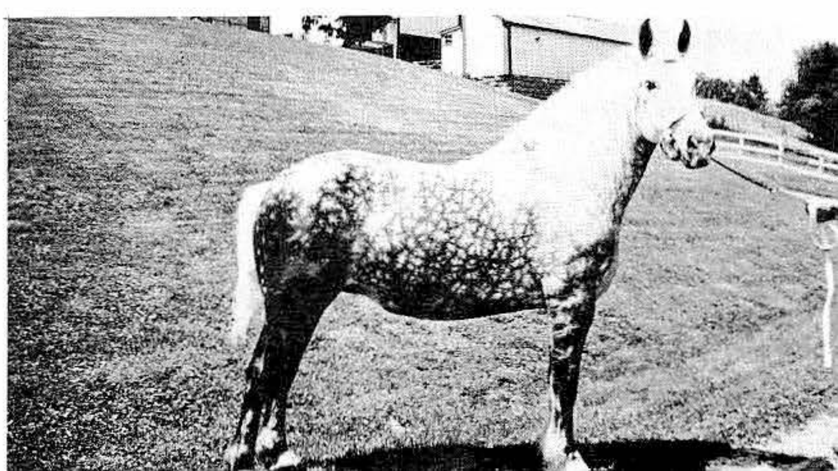
The name "French Draft" is the designation applied broadly to all breeds of draft horses originating in France, and does not refer to one specific breed as might be inferred from its usage in this country. This classification includes the Percheron and a number of other draft breeds in France, such as the Boulonnais, Nivernais, Breton, Ardennais, and Picardy. Of all the French breeds, the Percheron is by far the best known, and has obtained a foothold in this country much greater than any other French breed of draft horses.



William Johnson's 15-year old Percheron mare, Donna-Sue, is about 1,900 lbs. She has had 9 foals. Percheron foals, to be accepted for registry in the French book, must be registered during the year of their birth. Prior to such registration they must be examined by an official appointed by the Percheron Horse Society of France, who takes a careful description of their color and markings and brands them on the neck with the letters "S.P." enlaced. William Johnson farms in Downingtown, Pa.

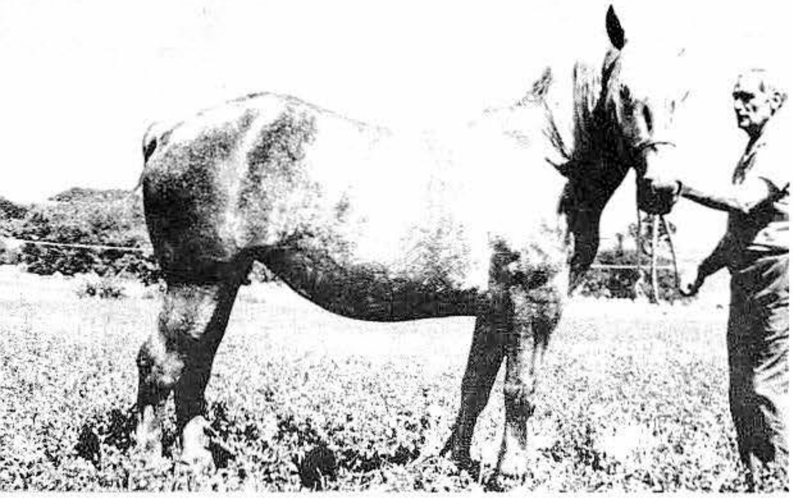


Frank W. Knauf's Percheron stallion, Mr. Magic, is 8 years old and is about 1,900 lbs. This picture was taken on the Knauf's farm, "Lou-Fran-Farm", of Harmony, Pa. The Percheron Horse Society of France was organized in 1883, and in addition to looking after the registration of Percherons it holds an annual summer show in the Percheron district.

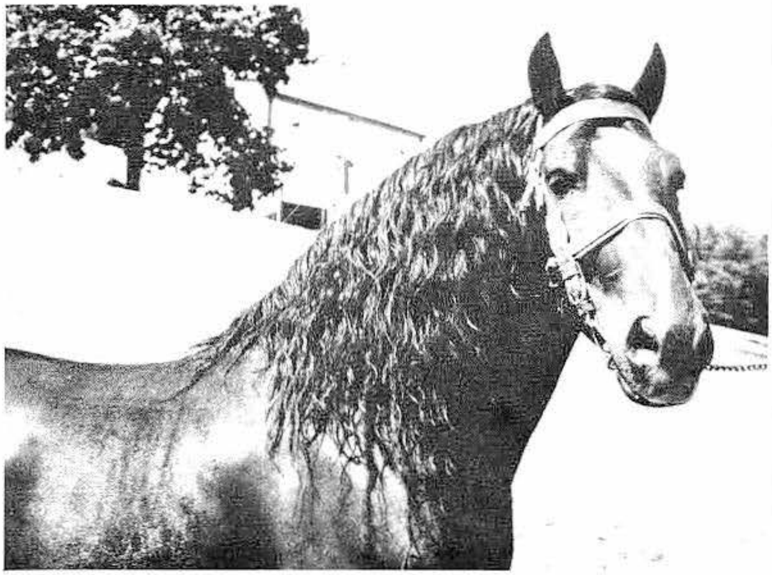


Frank Knauf's Percheron mare, Lou-Fran-Nan, is 8 years old and is about 2,000 lbs. The introduction of Percheron horses into the United States dates back many years. One of the early stallions brought to this country, which exerted considerable influence on our draft stock, was Louis Napoleon, imported in 1851 by an Ohio firm. Other Percherons were imported about this time and during succeeding years. During the early seventies they were imported in large number, and these importations have continued to the present time.

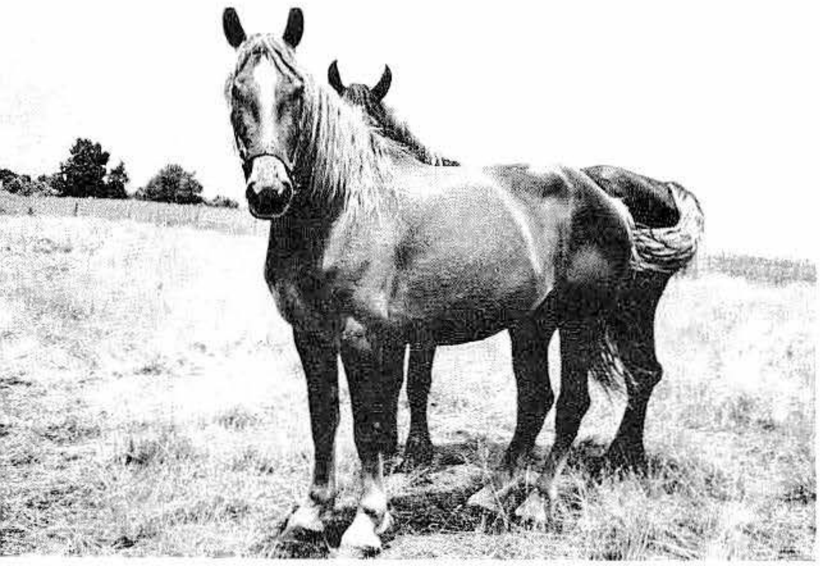
Percheron



Charles Wray's Percheron mare, Hannibell-Degas, is 10 years old and about 1,950 lbs. The Percheron legs are free from the long hair or feather characteristic of the Clydesdale and the Shire. In action the Percheron is good at both the trot and the walk. The trot is characterized by a snap and boldness not ordinarily displayed by most of the other draft breeds. Single births are the rule among horses. Twins are a genuine rarity and only a few births of three or more foals have ever been recorded.

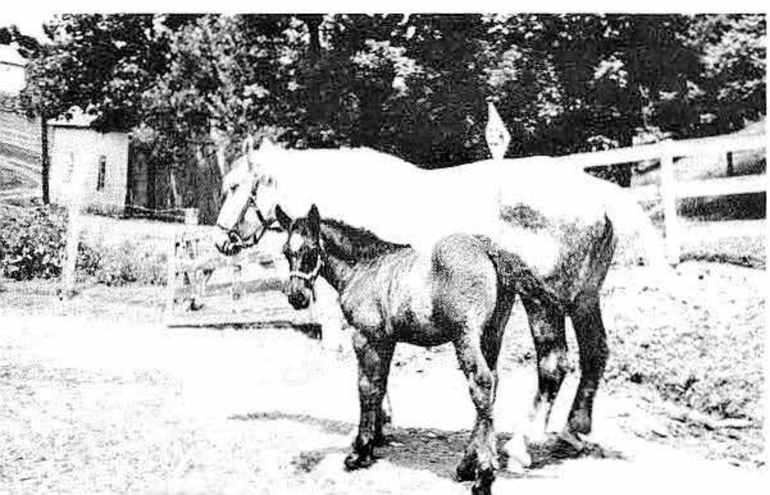


The head of the Percheron is clean-cut, and of medium size. More refinement is noticed about the head and neck of the Percheron than in any other draft breed. The neck is rather short and well crested. This is Mr. Magic, owned by F. V. Knauf.

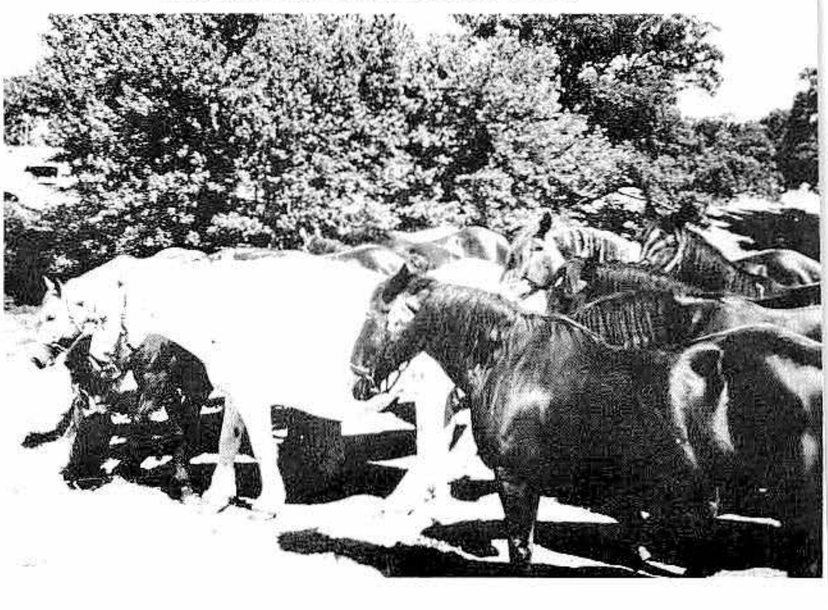


Frank Knauf's mare, Lou-Fran, is 3 years old and about 1,350 lbs. She is sorrel in color, a very rare color for a Percheron. In 1876, the National Assn. of Importers and Breeders of Percheron-Norman Horses was organized. The Percheron Horse Assn. of America is an outgrowth of that association.

Frank Knauf's mare named King's Nerva is 8 years old and weighs about 1,900 lbs. Her foal is eight weeks old. The name "French Draft" is the designation applied broadly to all breeds of draft horses originating in France, and does not refer to one specific breed as might be inferred from its usage in this country. This classification includes the Percheron and a number of other draft breeds in France, such as the Boulonnains, Nivernais, Breton, Ardennais, and Picardy. Of all the French breeds the Percheron is by far the best known, and has obtained a foothold in the U.S.A. much greater than any other French breed of draft horses.



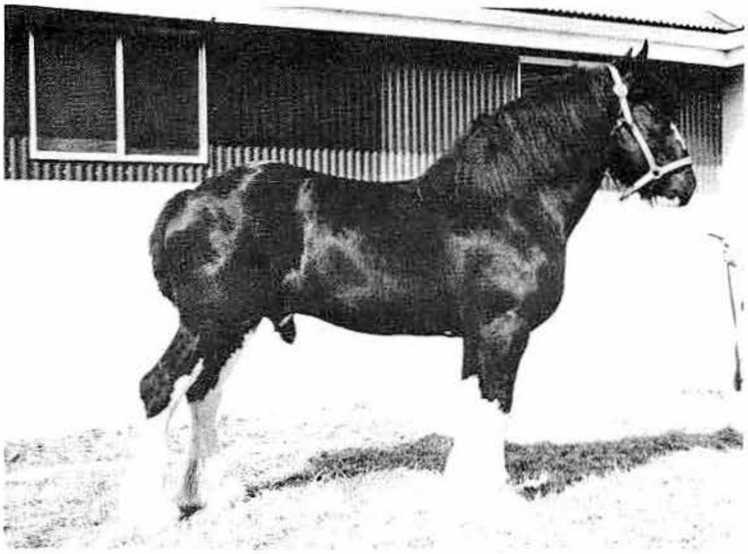
Today it is hard to find a herd of 20 or more draft horses in this country, such as Charles Wray's herd of 20 Percherons. There are over 7 million horses in the United States and the total investment in the horse industry is $12 billion. More people are breeding, buying, showing and racing horses than at any time in U. S. history. Entire second industries have been created to serve the nation's horsemen—ranging from specialized clothing to trailers.



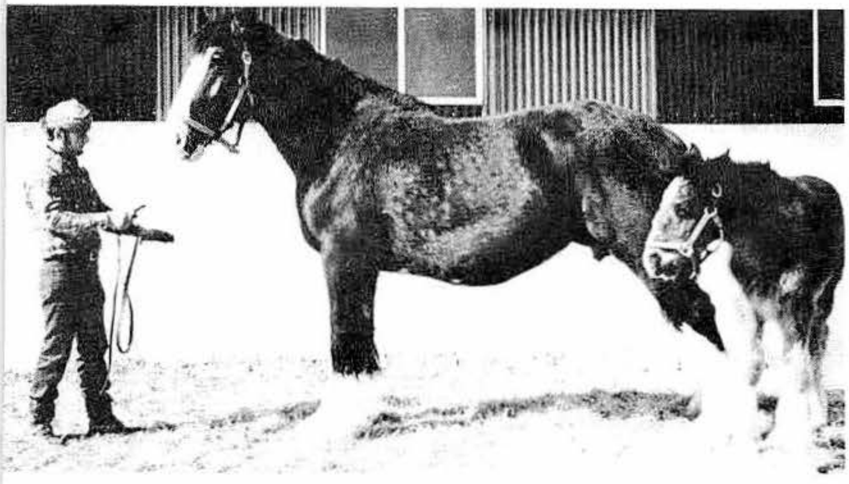
Shire

The Shire originated and was developed in England, and today is bred in all sections of that country. The real origin of this breed is more or less speculative. It is known that this type of draft horse existed in England in early times. It is probable that the Shire was originally of very mixed breeding, but at the present time the Shire is bred very pure. In 1878, the Shire horse breeders of England were organized under the name of the English Cart Horse Society. In 1884, the name was changed to the Shire Horse Society. In addition to the registration of horses, the society holds an annual show and sale in London, and also awards medals and prizes at the leading agricultural shows in England and some of the fairs and expositions in the United States.

Shires were imported into this country a good many years ago. George E. Brown, in Volume 1 of the *American Shire Horse Studbook*, states that in 1853 a Mr. Strickland imported a stallion direct from England to Aurora, Ill., where the horse was known as John Bull. Volume 1 of this studbook shows the registration of a small number of stallions imported in 1880, and these importations increased until 1887, when more than 400 Shires were imported. The American Shire Horse Assn. was organized in 1885.



National Brewing Company's Nottage Prince was sired in England by Crossfields Supreme. In 1969, he was stallion champion in the Three Counties and Royal Welsh Shows. Then a year later, was stallion champion in the Three Counties Show, the Royal Show of England and the Shire Horse Show. He is kept at Green Willow Farms, Winfield, Md., owned by Mr. and Mrs. Green



National Brewing Company's 12-year old Shire mare, Hainton Jennifer, is about 1,850 lbs. and was imported from England. The Shire originated and was developed in England, and today is bred in all sections of that country. The real origin of this breed is more or less speculative. It is known that this type of draft horse existed in England in early times. It is probable that the Shire originally was of very mixed breeding, but at the present time the Shire is bred very pure.

Norbert Behrendt's 2-year old Shire stallion, Ladbrook Jock, is about 1,800 lbs. and was imported from England. Behrendt supplied this picture. He lives in Highland, Md., and is a member of the Maryland Shire Horse Associates. Shires were imported into this country a good many years ago. George E. Brown, in Volume I of the American Shire Horse Studbook, states that in 1853 a Mr. Strickland imported a stallion direct from England to Aurora, Ill., where the horse was known as John Bull. Volume I of this studbook shows the registration of a small number of stallions imported in 1880, and these importations increased until, in 1887, more than 400 Shires were imported. The American Shire Horse Assn. was organized in 1885.

National Brewing Company's 11-year old Shire mare, Swanland Dale Modern Maid, is about 1,950 lbs. and was imported from England. Here she is trotting with her foal born in December, 1974. In 1878 the Shire horse breeders of England was organized under the name of the English Cart Horse Society. In 1884, the name was changed.

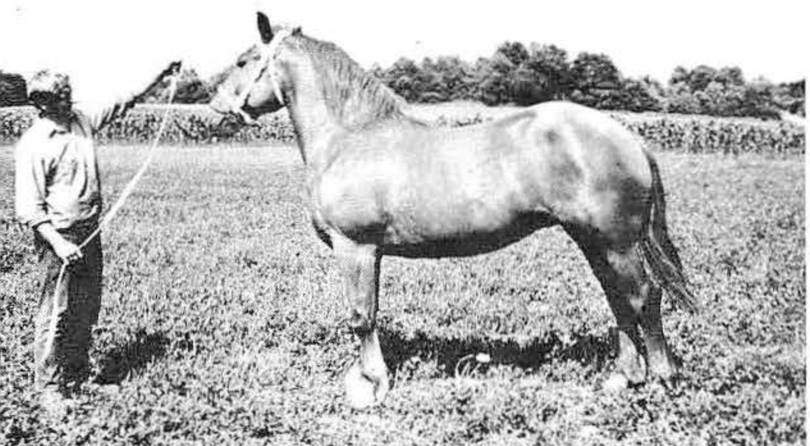
Suffolk

The native home of the Suffolk breed is Suffolk County, in eastern England, and the production of the breed in that country is confined almost entirely to that and adjoining counties. The Suffolk has not been bred for the heavy draft work of the city, but largely for the farm. For this purpose it ranks high among the farmers of eastern England, who consider it capable of doing a large amount of labor on a small quantity of feed for longer periods than other drafters. The breed is used more exclusively for farm work than any other of the draft breeds.

Suffolks were first imported into U.S.A. in the early 1880s and have been imported since then in small numbers. However, these horses have never gained a very strong foothold in the U. S. One reason for this has no doubt been the lack of size as compared with other draft breeds. Another reason that few have been imported has probably been that they have not been bred in very large numbers in England, being confined to a limited area, and the home demand of the farmers has been sufficient to take care of most of the animals produced. Furthermore, buyers in other countries have purchased a good many at prices above what Americans would pay.

The Suffolks in U. S. are found in small numbers in a few states, but have never gained any strong foothold, Consequently, their adaptability to U. S. conditions can scarcely be judged. The stallions have been crossed to some extent on mares in the U. S., but demand for extreme size has prevented such crossing from being carried on sufficiently to judge its value, except in a small way.

D. F. Neal's 4-year old Suffolk stallion, Langes Diamond, is about 1,900 lbs. and was imported when in foal from England. D. F. Neal raises and breeds Champion Suffolk horses in Slippery Rock, Pa. The native home of the Suffolk County, in eastern England, and the production of the breed in that country is confined almost entirely to that and adjoining counties.



D. F. Neal's 8-year old Suffolk mare, Judi's Susies Victory, is about 1,700 lbs. The Suffolk has not been bred for the heavy draft work of the city, but largely for the farm, and for this purpose it ranks high among the farmers of eastern England, who consider it capable of doing a large amount of labor on a small quantity of feed for longer periods than other drafters.

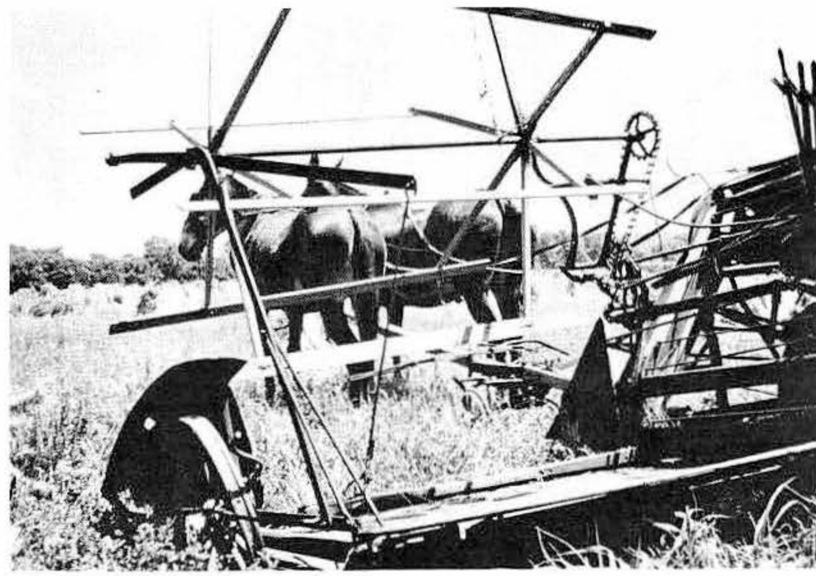
D. F. Neal's son is trotting Judi's Susies Victory in his hay field at Slippery Rock, Pa. The Suffolks were first imported into the U.S.A. in the early eighties and have been imported since then in small numbers, but have never gained a very strong foothold in the U.S. One reason for this has no doubt been the lack of size as compared with other draft breeds.

Anthony T. Scalzo's Suffolks line up for the camera. From left to right are Empress, Queen, and Sprite. Scalzo lives in Red Creek, N. Y., and raises Suffolk horses. The Suffolks in the U. S. are found in small numbers in various states, but have never gained any strong foothold, and consequently their adaptability to U. S. conditions can scarcely be judged. The stallions have been crossed to some extent on mares in the U. S., but demand for extreme size has prevented such crossing from being carried on sufficiently to judge its value, except in a small way.

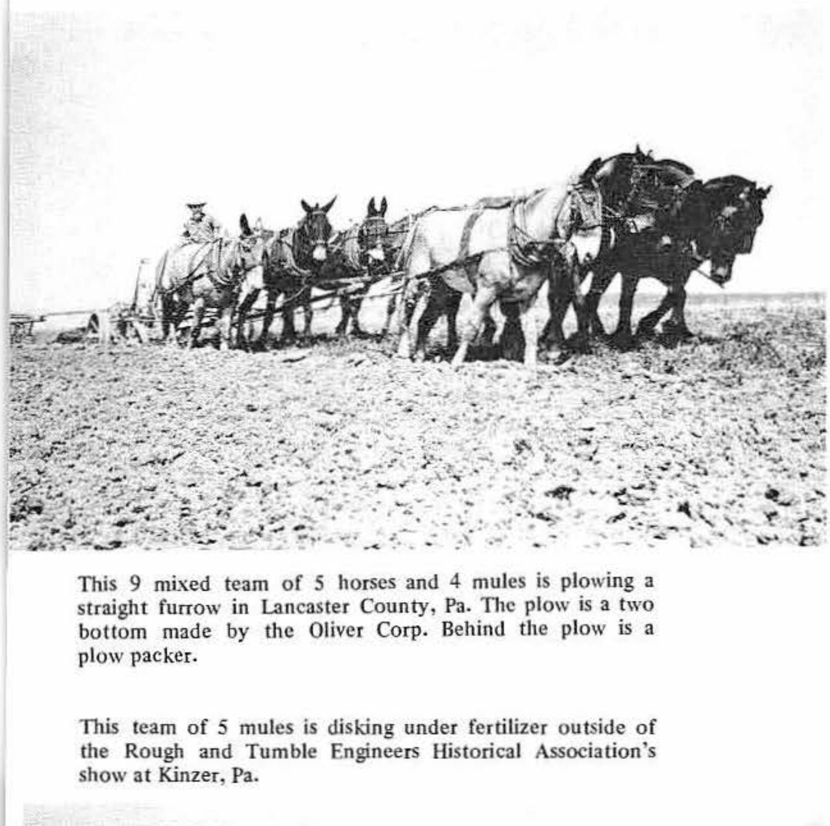
Mules

The mule is the classic example of the deliberate and widespread use of hybrization for producing stock in which vigor is an important consideration. The cross has shown consistently uniform results. From its horse ancestry it inherits substance and size, and to some extent alertness. From its ass ancestry, it gets its steady going qualities, sure-footedness, and the ability to withstand long periods of hard labor in hot climates, in mines, and under similar adverse conditions.

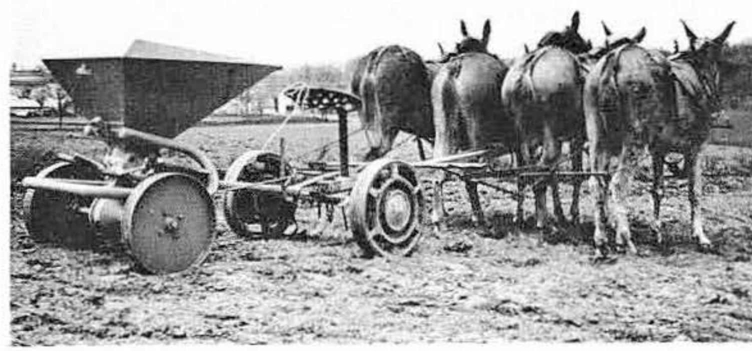
In the U. S., one of the earliest and most influential sponsors of the mule was George Washington. In 1785, a jack and two jennets of the Andalusian breed, gifts from the King of Spain, arrived at Mount Vernon. This was the first recorded jackstock importation in American history. Later Washington received a Maltese jack and jennet from the Marquis de Lafayette. Washington bred the Maltese jack to an Andalusian jennet. The progeny, which he named Compound, was the first "all-American" jack. This jack sired some excellent mule stock, and the value of the mule as a work animal was soon recognized by the early planters.



Team of mules pulls an International Harvester twine binder in Lancaster County, Pa. Running this binder is a one-man operation.



This 9 mixed team of 5 horses and 4 mules is plowing a straight furrow in Lancaster County, Pa. The plow is a two bottom made by the Oliver Corp. Behind the plow is a plow packer.

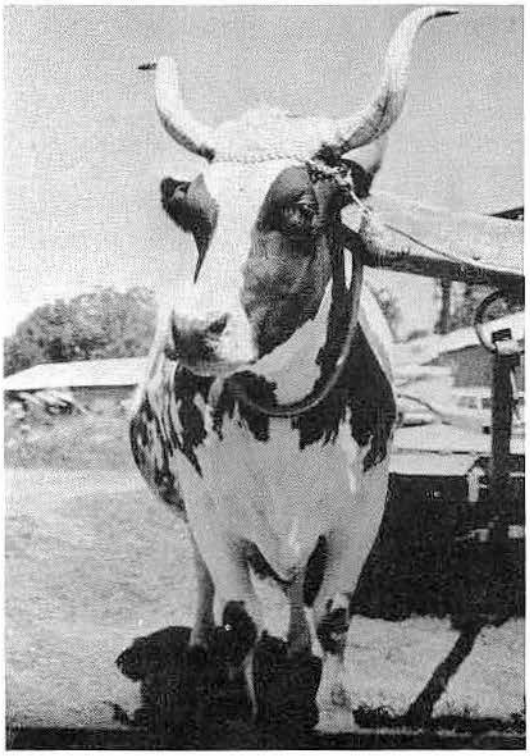


A team of 4 mules pulls a new fertilizer on a farm in Lancaster County, Pa.

This mixed team of 5 horses and 4 mules works in Lancaster County, Pa. The mule is the classic example of the deliberate and widespread use of hybridization for producing stock in which vigor is an important consideration. The cross has shown consistently uniform results. From its horse ancestry it inherits substance and size, and to some extent alertness. From its ass ancestry it gets its steady going qualities, sure-footedness, and the ability to withstand long periods of hard labor in hot climates, in mines, and under similar adverse conditions.

This team of 5 mules is disking under fertilizer outside of the Rough and Tumble Engineers Historical Association's show at Kinzer, Pa.

Oxen

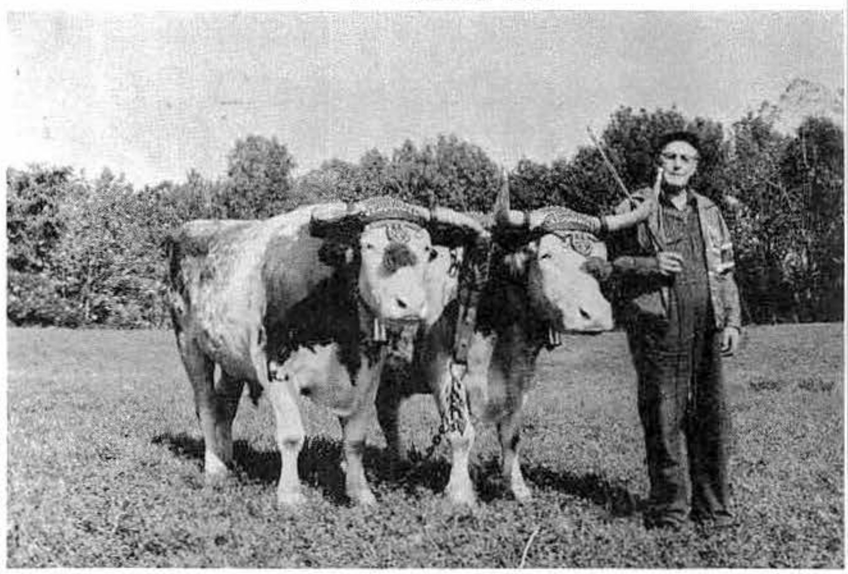


One of Worth McClure's oxen is ready to pull the hay wagon at the Williams Grove Historical Steam Engine Assn. show. The animal is of the Ayrshire breed, nine years old and about 2,000 pounds in weight. Worth McClure lives in Holt Wood, Pa. Pictures on an Egyptian tomb, built some 1400 or 1500 years B.C., show grain being cut with sickles and carried away to be threshed by tramping oxen. Aside from the sickle, which dates back at least to 3000 B.C., there was little mechanization of the harvest until the middle 1800's. Pliny tells of a stripper - type header, pushed by oxen yoked behind it and used in the fields of Gaul during the first century of the Christian era, but the idea faded into history.

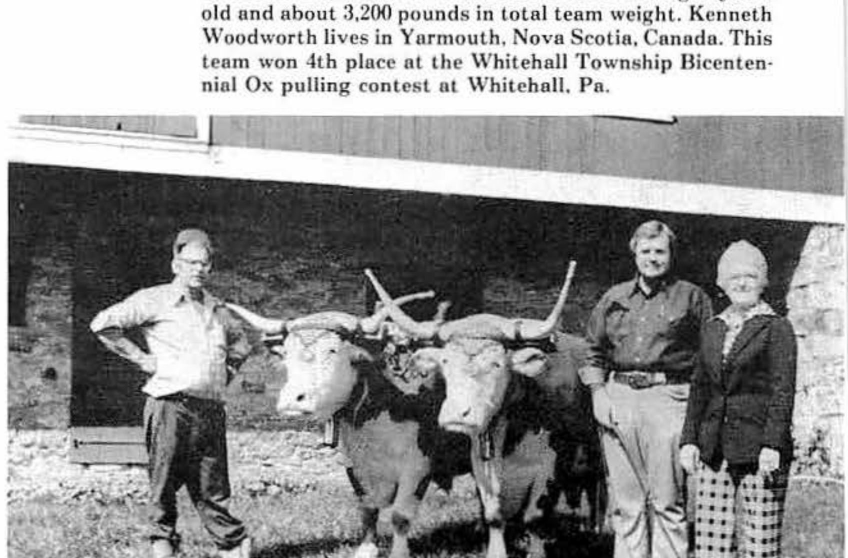
Darel Watkine's yoke of oxen is used for ox-pulling contests. The oxen are of the Devon breed, nine years old and about 3,550 pounds in total team weight. Darel Watkines lives in Yarmouth, Nova Scotia, Canada. This team won 2nd place at the Whitehall Township Bicentennial Ox pulling contest at Whitehall, Pa., in September 1976. The oxen must weigh in at under 3,600 lbs. in order to qualify for competition. Costing approximately $3,000 a pair, these oxen possess an incredible amount of strength and, with their strength, an accompanying $200 monthly appetite.

This is a very young team of Holstein steers, broke to the yoke and working. They are on parade at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa., in August, 1976. Oxen are called oxen only after they reach the age of four. Before that age is reached, they are called steers.

Bazel L. Lohne's yoke of oxen are used for ox-pulling contests. The oxen are of the Ayrshire breed, seven years old and about 3,600 pounds in total team weight. Bazel Lohnes lives in Bridgewater, Nova Scotia, Canada. The oxen wear either a "Neck" or a "Head" yoke when competing. This team is using a head yoke. In either case, a heavy chain is suspended from the center of the yoke running down between the oxen and hooked to a coupling at the end of the sled used for pulling contests. This team won first place at the International Ox Pull contest at Bridgewater in July 1976. Then they won first place at the Whitehall Township Bicentennial Ox pulling contest at Whitehall, Pa., in September 1976.

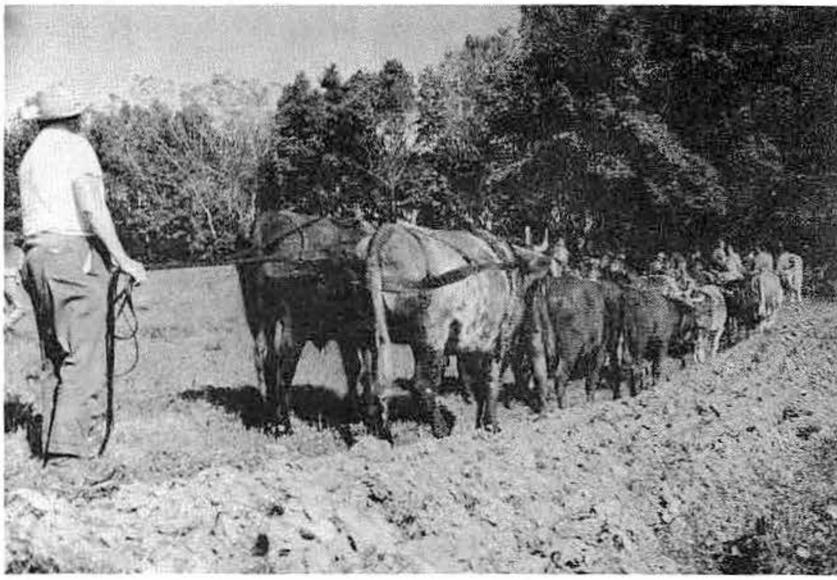


Kenneth Woodworth's yoke of oxen is used for ox-pulling contests. The oxen are of the Hereford breed, eight years old and about 3,200 pounds in total team weight. Kenneth Woodworth lives in Yarmouth, Nova Scotia, Canada. This team won 4th place at the Whitehall Township Bicentennial Ox pulling contest at Whitehall, Pa.



Oxen

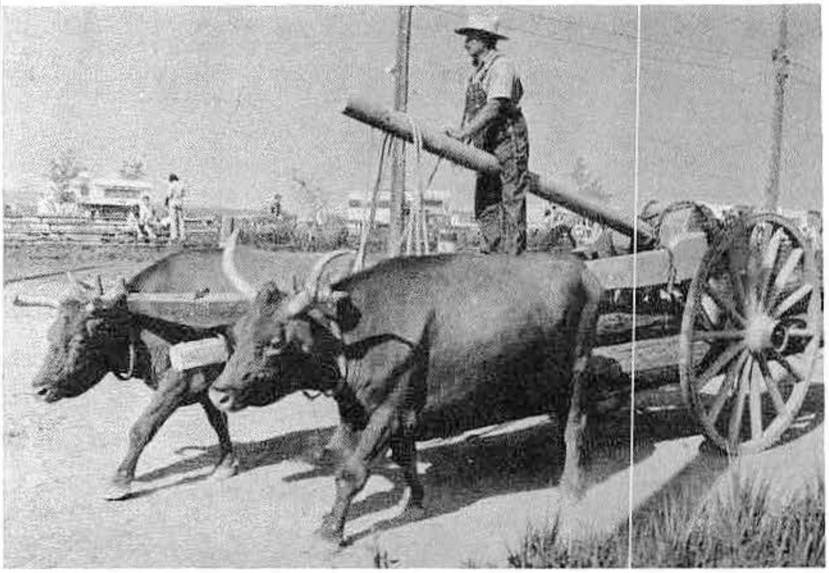
Plowing is being accomplished with Kenneth Woodworth's Hereford oxen at the Troxell-Steckel House festival in Egypt, Pa. This demonstration was part of the Whitehall township's Bicentennial Weekend festival. Kenneth Woodworth's is leading his oxen. He is from Yarmouth, Nova Scotia, Canada. The Egyptians used oxen to pull wooden plowers, but plowing with oxen is slow. A half acre is a day's work.



Eight teams of oxen are getting ready for the Troxell-Steckel House Festival oxen plowing demonstration in Egypt, Pa.

These oxen are on parade in Coplay, Pa. before going to the Whitehall Township Bicentennial Ox pulling contest in September, 1976. The oxen pulling contest was part of the Whitehall township's Bicentennial weekend festival.

William Handley's yoke of oxen are pulling a big wheel logging cart. The oxen are of the Devon breed, 19 years old and about 3,200 lbs. in total weight of the team. William Handley lives in Cambridge, Md. These oxen are at the Rough & Tumble Engineers Historical Assn. show at Kinzer, Pa., every year. In the winter time up north, oxen are used for dragging heavy timer out of the woods for fuel and timber. This is still being done today by a few oxen teams in the upper New England states.



Paul D. Hoover's yoke of oxen is pulling a covered wagon built in 1920. The oxen are of the Holstein breed and about 4,000 pounds in total weight of the team. Paul Hoover is from Manchester, Pa. and owns both the team and the wagon. These oxen were in action at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa. in 1978.

Working With Horses

Thomas Jefferson used principles of mathematics in 1788 to make plow moldboards more efficient. Then, a cast-iron plow was patented in 1797. This development met with resistance at first because of fear that it poisoned the land and caused weeds to grow. But the idea of casting in one piece later opened the way to mass production of identical machines from the same pattern.

Westward-bound settlers were on the move, and those who reached the rich, black land of the Mississippi River country were soon confronted with a heart-breaking problem. Their iron-patched, wooden plows and cast-iron plows usually succeeded in breaking the prairie sod, but refused to scour the second time over. The rich, black earth, high in organic matter, clung to the moldboard, increasing draft and making plows difficult to hold in the ground. A paddle to clean moldboards was standard equipment for every plowman. The problem was so serious that many gave up their homesteads in disgust to return east where they could at least make a seedbed to grow thier crops.

When such a crisis presents itself, someone usually rises to the occasion, and this crisis was no exception. Blacksmiths in the new country began fastening steel saw blades over the surfaces of wooden moldboards. The smooth steel took on a polish and as a result, it scoured in Illinois soil, cutting the roots of tough sod with much less draft.

Among one of the earliest hay machines is a mower or grass-cutting machine patented in 1822. This mower consisted of a series of scythes, circular in shape, which rotated at the end of a shaft a few inches above the ground. With the rake, a man and horse could put hay in windrows at a rate of two or three acres an hour – as fast as eight or ten men with hand rakes.

Then, in a few years, came a series of reaper inventions with reciprocating blades protected by iron fingers or guards. This established the successful pattern for cutting devices for both mowers and reapers, and for combinations of both. At first, cutter bars were rigid. That was also true of the early single-wheel mowers as well as the reapers.

Then came a significant milestone which set the pattern for mowing machines of the future – 2-wheel mowers with flexible or hinged bars. There were important patents on this development from 1853 to 1860. This was the turning point away from combined machines, but even as late as 1880, combined mowers and reapers were still in general use.

By 1865, it was reported, nearly all hay in this country was cut mechanically except on the roughest ground.

This Belgian horse is pulling a one horse walking plow at the Eastern Pennsylvania Horse Plowing Contest. The judging of the plowing includes condition of harness, depth of plowing, width of plowing, evenness of furrow and straightness of furrow. This contest is held every year at The Alexander Farm, Schaefferstown, Pa.

A team of horses pulls a harrow in Lancaster County, Pa. Back in the early 1800's, a brush harrow or a log cut in the woods was the only animal drawn implement for smoothing the seed bed. Then came the flexible, wood-bar type harrow with iron teeth. The next step was a spring-tooth harrow with flexible teeth. This worked better over roots and stones.

Here a team of Belgian horses is pulling a one bottom Sulkey riding plow. The driver and the team were from Dover, Delaware. This took place at the Eastern Pennsylvania Horse Plowing Contest in 1975 on the Alexander Farm, Schaefferstown, Pa. The two-wheel Sulkey Plow made its appearance about 1864, and for the first time in history, the plowman no longer had to plod his weary way on foot. A few walking gang plows were in use by that time, particularly on the Pacific Coast. By 1867, walking gang plows were supported on wheels and later they were equipped with seats.

Working With Horses

Unlike grain drills and seeders, the corn planter is strictly an American development, just as corn is a native American crop.

A two-row corn planter came into the picture in a limited way in 1839, and the first checkrower, a single-row walking planter, was invented in 1857. Neither made much impression.

One of the real milestones came in 1860 with the appearance of a two-row corn planter which was tripped by hand for cross-checking. The field was cross-marked first and a man or boy pulled a trip lever each time the planter runners crossed a mark. This machine required two operators, one to drive and one to trip, but it was an important step forward because farmers felt they needed to cross cultivate in order to control weeds with the equipment they had at the time. First patents on this planter were issued in 1853, but the provision for a rider to operate the dropping mechanism was covered by a patent in 1860.

That extra man on the planter was an immediate challenge to inventors and in 1875 an automatic checkrower appeared which caught on. It used knotted cord at first to trip the planting mechanism, but planter wire took over later. Thus, the corn planter became a one-man machine. Still another improvement came in the early 1890s – the single-kernel accumulative drop corn planter. It counted out any desired number of kernels to be planted in a hill.

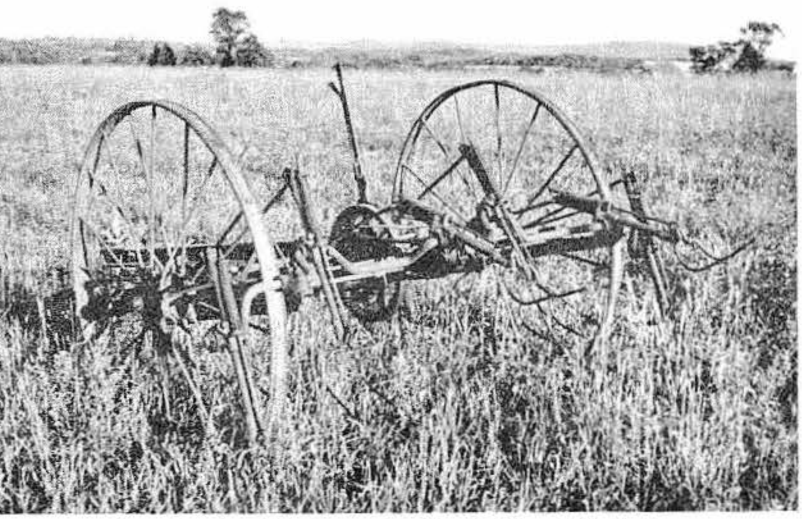
Elmer Lapp drives his team of three Belgian horses pulling a walking plow at the Eastern Pennsylvania Horse Plowing Contest. Mr. Lapp is from Kinzer, Pa. Thomas Jefferson used principles of mathematics in 1788 to make plow moldboards more efficient. A cast-iron plow was patented in 1797.

This farmer is planting corn with a team of horses and a John Deere two-row corn planter. Unlike grain drills and seeders, the corn planter is strictly an American development, just as corn is a native American crop. One of the real milestones came in 1860 with the appearance of a two-row corn planter which was tripped by hand for cross-checking.

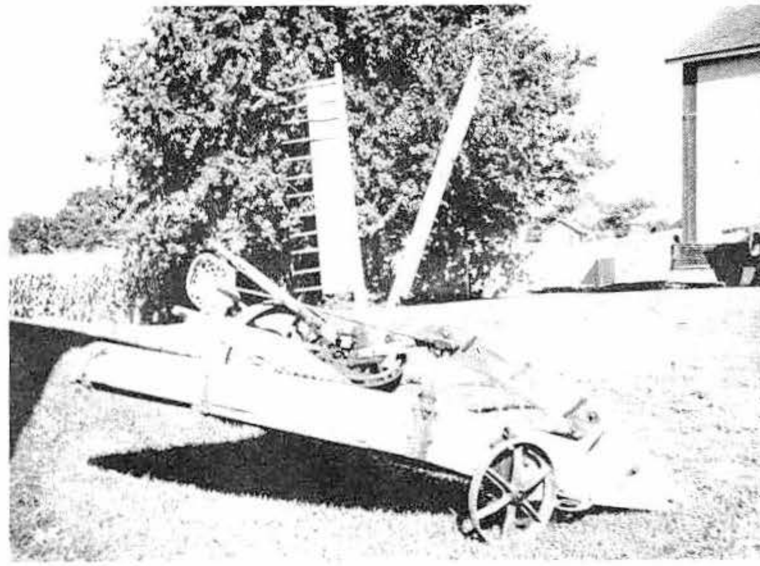
A team of three Belgian horses pulls a walking plow at the Eastern Pennsylvania Horse Plowing Contest. Westward-bound settlers were on the move, and those who reached the rich, black land of the Mississippi River country were soon confronted with a heart breaking problem. Their iron-patched, wooden plows and cast-iron plows usually succeeded in breaking the prairie sod, but refused to scour the second time over. The rich, black earth, high in organic matter, clung to the moldboard, increasing draft and making plows difficult to hold in the ground. A paddle to clean the moldboards was standard equipment for every plowman. The problem was so serious that many gave up their homesteads in disgust to return east where they could at least make a seed bed to grow their crops.

Elmer D. Lapp is driving his team of five Belgian horses pulling a two bottom 3-wheel sulky plow at the Eastern Pa. Horse Plowing Contest. He is from Kinzer, Pa. Another plow milestone was recorded in 1884 with the coming of the threshwheel sulky which gave the rider a great deal more stability and safety. This plow also introduced a new principle of leveling, both in and out of the ground. About 1899, a foot lift was introduced.

Working With Horses



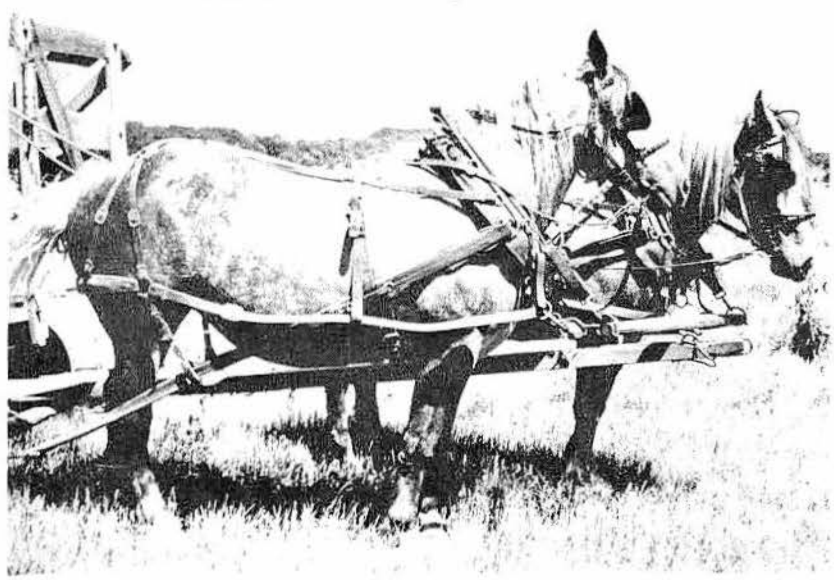
This tedder is still being used today in New Oxford, Pa. The tedder enabled farmers to fluff up windrows of hay which had become wet from rain. Improved hay tedders came out in the 1850's.



This is a self-rake reaper made by D. M. Osborne & Co., Auburn, N. Y. It is at the Eastern Pennsylvania Horse Plowing contest on Old Alexander Schaeffer Farm, Schaefferstown, Pa. The horse plowing contest is held every year in September.

The Wrays and some neighbors are loading wheat and taking it to the barn for threshing. In the background are shocked oats. A shock does two things. It holds the heads of the wheat or grain up off the ground so a more complete drying process can occur, and the shocks mean less stops for the bundle wagons hauling the wheat or other grain to the threshing machines. A shock usually has 5 to 6 sheaves.

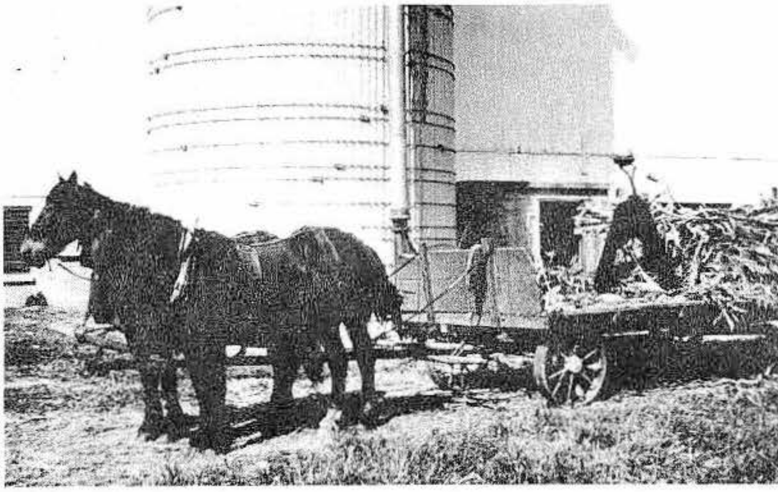
A close-up of Mr. Wray's team of Percherons gives a view of the draft horse harness. This harness consists of bridle, collar, saddle and breechings.



Here six matched Belgians pull a disk and a roller. Rolling and disking at the same time makes a very smooth seed bed.

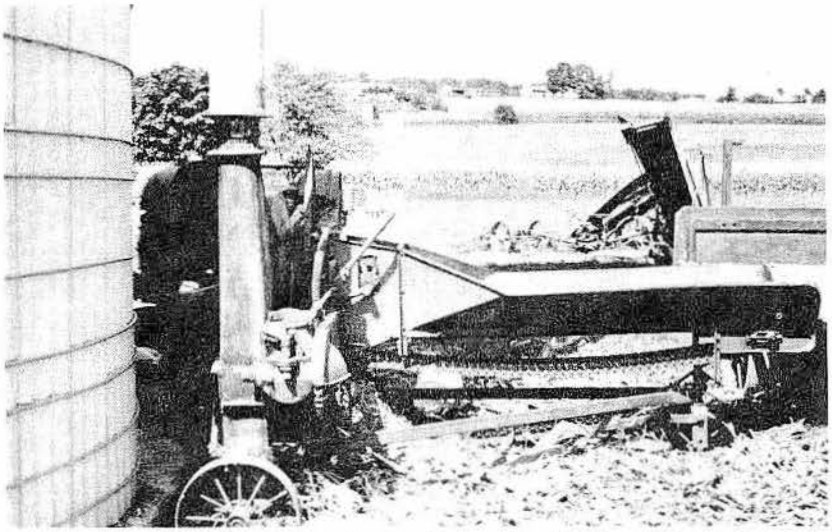
Working With Horses

Drilling Alfalfa with two Belgians. This took place on Elmer Lapp's farm in Lancaster County, Pa., with Lapp's son, Evan, driving the team. The grain drill was made by American Seeding Machinery Co., Springfield, Ohio. In the U.S.A., the first patent on a seeding machine was granted in 1799, but in 1840 and 41 came developments which distinguished American drills from those of English inventors. These included devices for delivering the seed and regulating its volume. The force feed invented in 1851 has been described as "the most important invention of the drill industry in America."



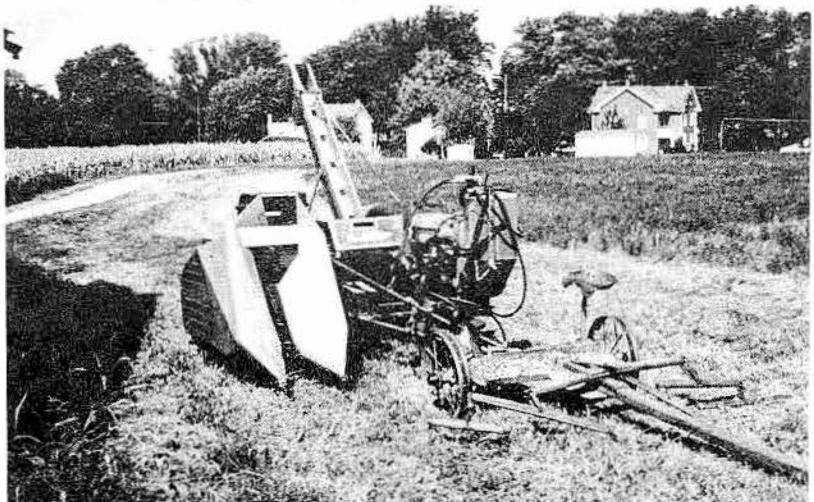
A team of horses has pulled a load of corn up to the ensilage cutter. The corn is being cut and put into the silo.

At the silo, an ensilage cutter will chop the corn stalks and blow the cut corn up the tube and into the silo. The cut corn in the silo is called silage or ensilage. In the winter, the corn silage is taken out of the silo and fed to the animals. The first corn ensilage cutters made their appearance about 1876. Undoubtedly, the first storage of this succulent green feed was in trench silos, but upright silos were soon reported, first square and then round. In 1882, only 99 farmers in the country owned silos, but the idea was on its way. By providing a method of preserving green feed for year-round use, the silo and ensilage cutter made one of the truly great contributions to modern livestock feeding.



A close-up of an ensilage cutter. Ensilage, fed on almost every dairy farm, keeps milk and butter production high during winter months.

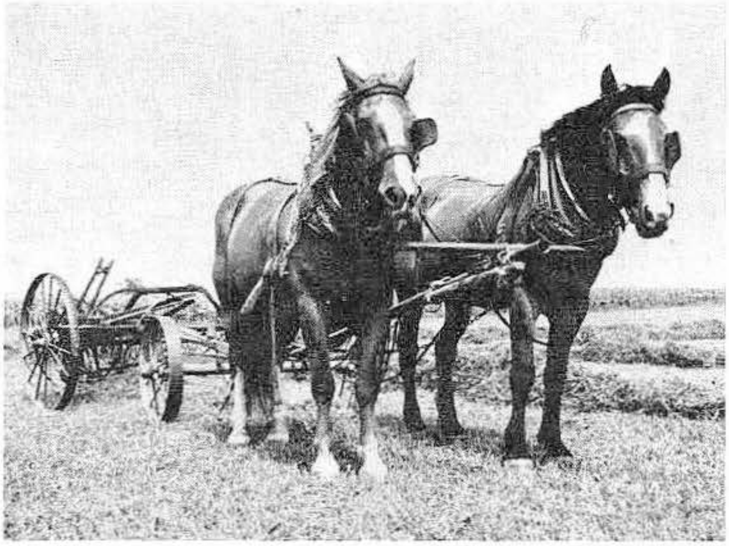
A one-row corn picker, made by New Idea and powered by an Allis Chalmers gasoline engine, is pulled by horses in Lancaster County, Pa. There was some attempt to pick corn with machines in the 1860's and 70's, but the first corn picker patent considered important was allowed in 1880. A few horse-operated machines were built, with commercial production reported in 1909. One-row pickers, both horse and tractor-drawn, were sold during World War I, but for all practical purposes, the corn picker waited for power take-off operations from the tractor.



Working With Horses

Bob Wray is driving a team of Percherons pulling a manure spreader on Wray's Dairy Farm, Ford City, Pa. The first type of manure spreader was the wagon-type. This machine encouraged the return of fertility to the soil.

Ray May's light draft team of about 1,400 pounds each pulls a wagon at the Rough & Tumble Engineers Historical Assn., Kinzer, Pa. One horse is 8 years old and the other is 10 years old. Ray Mays lives in Myerstown, Pa.

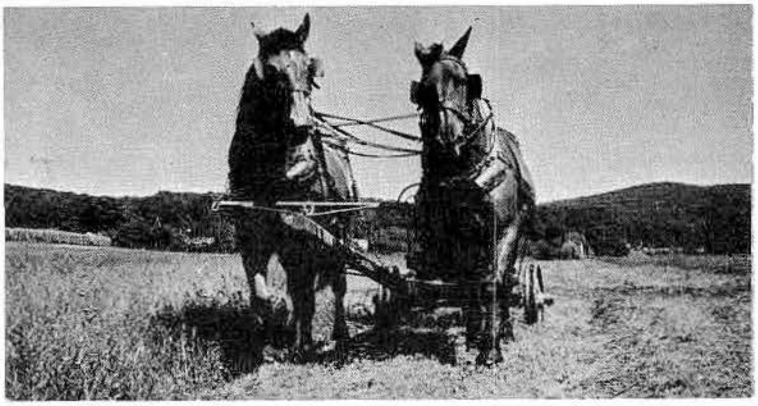


Raking with a team of horses and an International Harvester rake. Wood-frame, side-delivery rakes were tried in 1893 and proved so convenient they began replacing dump rakes and tedders. In 1914, a left-hand, reel-type, side-delivery rake appeared and farmers began thinking about curing and handling their hay more carefully to save more leaves.

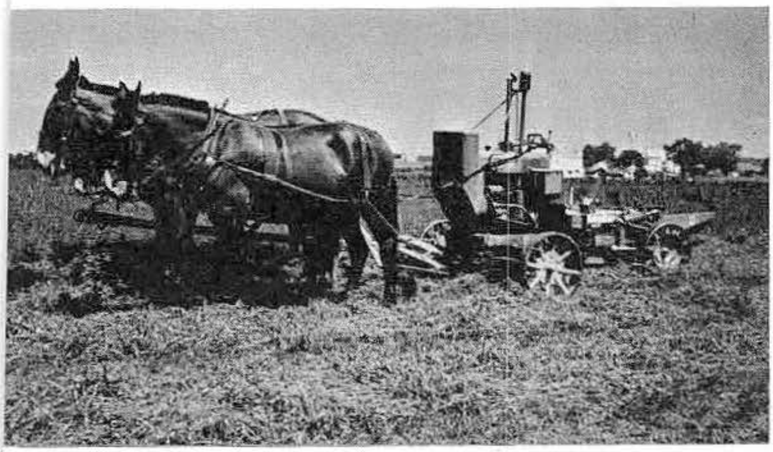
Clifford A. Teets, the author's grandfather, drives his team of Percherons in 1938 on his dairy farm of registered Guernseys in New Sewickly, Pa. He had three teams of Belgians and Percherons. The author's mother still remembers very clearly going to church and high school by horse and buggy. The author can still remember seeing the horses working on the farm.

W. R. Collison's team of 10 year old Belgian geldings pulls a wagon at the Delaware State Fair Antique Machinery and Steam Show, Harrington, Delaware. These Belgians are about 1,900 lbs. each. The driver, Chris Wyatt, is from Harrington, Del. W. R. Collison lives in Greenboro, Md. The man with the white beard behind the driver is the author's father, O. E. Norbeck, a retired YMCA general secretary with 32 years of service. He is an author of several books on the American Indian.

Working With Horses



Mowing with a team of horses in Lancaster County, Pa. Among one of the earliest hay machines was a mower or grass-cutting machine patented in 1822. This mower consisted of a series of scythes, circular in shape, which rotated at the end of a shaft a few inches above the ground.



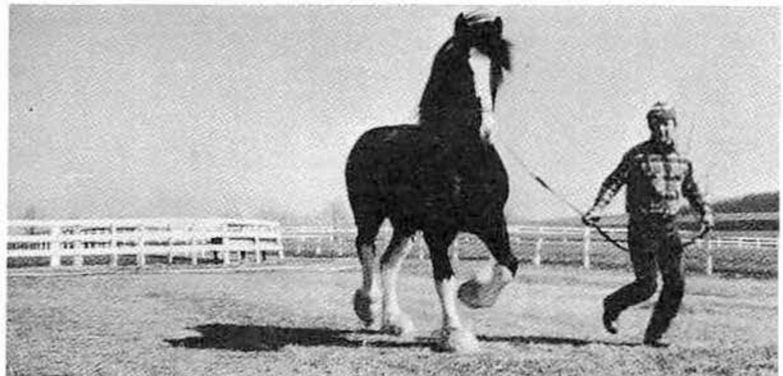
Mowing and crushing with an Allis-Chalmers gasoline engine and an International Harvester mower crusher, a team of four mules pulls the load. This took place in Lancaster County, Pa. From 1868, H. Cummings of Western Illinois, invented and used a steam "mower, reaper and thresher," one of the pioneer 1-man developments in the U. S. field of power farming.

The machinery used to make carriage wheels and light and heavy wheels for wagons. The picture is taken from C. & D. Cook & Co's. illustrated catalogue of Carriages and Special Business Advertiser, published by Dover Publications, New York.

Mowing and crushing with a Wisconsin gasoline engine and a New Idea mower crusher. A team of three Belgian horses is pulling the load in Lancaster County, Pa. By 1865, it was reported, nearly all hay in this country was cut mechanically except on the roughest ground.

J. D. Adams a township trustee in Indianapolis, invented this grader with adjustable leaning wheels in 1885. It was called the Little Wonder. It was a small, two-wheel, horse-drawn machine with a 7-foot blade set at a fixed angle, and wooden wheels that leaned only to the left. By 1897, Adams was able to build his own factory in Indianapolis and for the next 50 years it proved to be a development center for new ideas in earthmoving equipment. In 1928, he introduced the self-propelled motor grader. The J.D. Adams Co. was merged with the LeTourneau-Westinghouse Co. on January 1, 1955. Adams graders have gradually become known as Wabco motor graders. Today Wabco is part of American-Standard Co. The home office is in Peoria, Ill.

National Brewing Company's 7-year old Shire, Nottage Prince, is about 1,900 lbs. and a champion English Shire stallion. He has the fine qualities needed for breeding heavyweight hunters, open jumpers and superior draft horses.



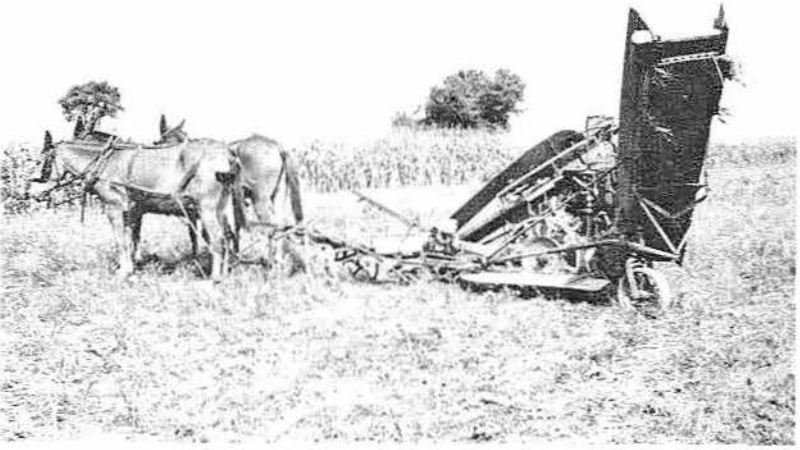
Cyrus McCormick

Mr. Cyrus Hall McCormick was born February 15, 1809, on the family farm, Walnut Grove, in Rockbridge County, Virginia. As a boy, Cyrus went to the Old Field School. When he was 15, he found that his boyish physique was insufficient to swing a heavy cradle in the harvest of grain; so he made a smaller implement to suit his slight muscles. At 18 he made himself some needed surveying instruments. Of greater importance was the invention of a hillside plow, which was his first major contribution to modern agriculture. It is also certain that he was in constant attendance on his father's labor in the farm blacksmith shop.

In July, 1831, Cyrus Hall McCormick invented, built, and displayed in a public trial the world's first successful reaper. Other men, both in America and England, had attempted to build a mechanical grain-cutting machine, but few of them had ever gone beyond crude plans submitted to the patent office. None of them had ever built a reaper that proved a success in the field. Young Cyrus spent three years in further experimentation before he was sufficiently satisfied with his machine to apply for a patent. The McCormick reaper was patented June 21, 1834.

Unlike most men gifted with true inventive genius, Cyrus Hall McCormick devoted the rest of his long and busy life in perfecting his one great invention, the reaper, making it more and more available to farmers. The Harvest season in Virginia offered but a short period each year for testing improvements so development of the reaper was of necessity slow. New machines were built almost every year, and the young inventor incorporated his latest changes in each new model. By 1840 Cyrus believed his reaper was sufficiently perfected to seek a wider market for it.

The little log forge shop in which the first reaper was built served as the only factory until 1843. On the McCormick homestead were timber, a sawmill, and a carpenter shop, as well as the forge shop. The steel cutting knives required especially fine workmanship, and they were made for a time by John McCown, a local blacksmith who operated a tilt-hammer shop, and later by Selah Holbrook of Port Republic, 20 miles away. Robert, the inventor's father, and Leander, a brother, and a few farm helpers formed the factory personnel as long as the reapers were built at home.



Team of three mules pulls a McCormick corn binder in Lancaster County, Pa. Corn binders, which borrowed the knotter idea from grain binders, were developed in time for the Columbian Exposition in 1893.

Winter and spring at Walnut Grove were busy seasons. During these periods reapers were built and orders were solicited. Farmers would not, as a rule, order machines until they were assured of good crops and fair prices. Also, the improvements made from time to time were of doubtful value until they could actually be tested in the harvest field. Building reapers for anticipated sales was entirely too speculative at that time; so production was limited to actual sales.

The first reaper sales were made in 1840, when two machines were sold for the harvest of 1841. In the latter year important changes were made in the cutting apparatus, including the reversing of the angle of serrations on the knife every inch and a half. After 1841, McCormick was for the first time satisfied with the operation of his machine. He advertised that from that time on "purchasers would run no risk, since if the reapers for 1842 were not strong and durable, and would not cut 15 acres a day and save one bushel of wheat per acre, ordinarily lost by shelling when the cradle was used, they could be returned." Seven reapers were sold for the harvest of 1842. Sales jumped to 29 in 1843 and to 50 in 1844.

This sudden demand for reapers created a new problem for the little factory on Walnut Grove Farm. How could so many machines be built? Perhaps McCormick realized from the very beginning that ultimately he must have a big factory in a wheat-growing country where he could supervise both production and sales and at the same time avoid heavy transportation charges. Such a move at that time was impossible because of limited capital, so Cyrus contracted with various firms–first in Brockport, N. Y., and Cincinnati, Ohio, and later in other cities–to manufacture reapers for their respective communities. Some of these contracts provided that a certain number of machines should be built for which McCormick was to pay the manufacturer a stipulated sum; others were licensed to build an unlimited number of reapers for a specific territory, the manufacturer to pay McCormick a royalty on each machine built. Length of the contracts varied from one to five years. During this time Cyrus' father and brothers continued production at home in the little log forge shop, while Cyrus himself was busy traveling over the country, spreading the reaper gospel generally and selling machines to anyone whom he believed financially able to buy.

Arrangements with licensed manufacturers were never very satisfactory. McCormick insisted upon quality above all things and those not as interested as himself in the reaper used inferior materials, poorly put together. Unexpected orders coming in from the

new western plains, combined with trouble with his licensed manufacturers, led to his move to Chicago in 1847. He established a small factory on the north bank of the Chicago River just east of the present Michigan Boulevard bridge. One by one his contracts with manufacturers expired and were not renewed. McCormick preferred to forge ahead alone, with the reapers built under his personal supervision by men whom he could trust.

The new Chicago home, known as McCormick's Reaper Factory, was a marvel of that pioneer day. It was a three-story brick building; 100 feet by 30 feet in ground area. A steam engine operated saws, lathes, planing machines, and grinding stones.

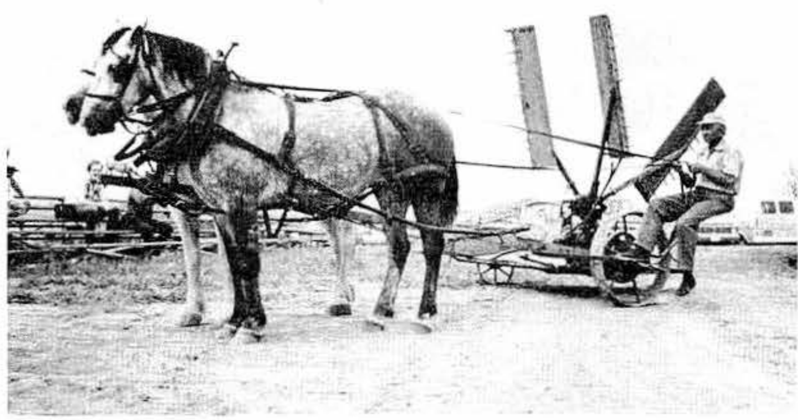
There were six forges in the first factory building and 33 men were employed. Cyrus' younger brothers, William S. and Leander J. came to Chicago with him and later joined him as partners. This was just the beginning of a manufacturing plant that was to grow by leaps and bounds. Within eight years the factory had a daily capacity of 40 machines. Four thousand reapers were built in 1856.

McCormick knew but one standard by which to measure the efficiency of his reapers–quality. He used the best materials obtainable and built the machines to give years of service to the farmer. He had provided as a background for his reaper a new kind of factory where, though he doubtless knew it not, he was putting into practice the first steps toward standardization and mass production, with a sternly enforced code to insure quality in the finished product.

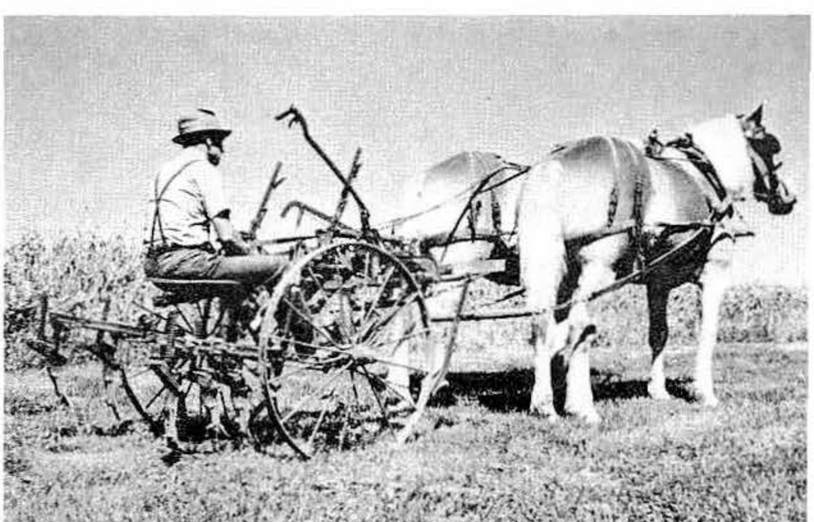
During the fifty years following the invention of the reaper in 1831, McCormick saw his original machine grow into the steel-frame twine binder. Slowly but surely it had progressed through the self-rake reaper, the Marsh harvester, the wire binder, and the wood-frame twine binder. The inventor had watched his reaper evolve from a machine replacing four or five cradlers in the harvest field into one which enabled one man to cut and bind twenty acres or more in a day.

The McCormick Reaper Factory on the Chicago River was completely destroyed by the great Chicago fire in 1871. Here again the inventor's indomitable courage was not to be downed. A few days before the fire he had acquired a new factory site on the southwest side of the city–far away from the crowded center of Chicago. To insure plenty of room for growth, he bought a wide expanse of prairie land where his vacant acres might serve first as testing fields and then for the expanding industry he foresaw. On this new site was built McCormick Works, which soon became and ever since has been the greatest farm implement factory in the world.

A close-up of a McCormick corn binder in the field. This binder is pulled by three horses. The corn binders replaced the corn knife. Machine husking of corn started about 1909.



William Johnson, a Percheron breeder from Dowingtown, Pa., drives a team of Percherons pulling a McCormick self-rake reaper. This self-rake reaper is kept at Rough & Tumble Engineers Historical Assn., Kinzer, Pa. This reaper deposits bunches of cut grain on the stubble, to be hand-tied with straw. The next improvement after the self-rake reaper was the wire-tie binder, followed by the twine-tie binder.



Elmer D. Lapp drives his team of Belgian horses pulling his one row corn cultivator made by McCormick Deering in 1943. He still uses this corn cultivator today on his farm in Kinzer, Pa. A wheel cultivator was patented in 1846. The straddle-row, two-horse walking cultivator, a greatly needed improvement, was patented in 1856, but did not come into general use until the 1870's. Later, the inventors and manufacturers devised seats for straddle-row cultivators and for the first time in all history, "the man with the hoe" could sit down to his important task.

John Deere

The life of John Deere, the pioneer blacksmith who gave to the world the steel plow, is a story that parallels the settlement and development of the great Middlewest, golden land of promise to the homestead seekers of the 19th century.

The third son of William and Sarah Deere, John Deere was born in Rutland, Vermont, February 7, 1804. While he was still a boy, the family moved to Middlebury, Vermont, where his boyhood and young manhood were spent. Here he received a common school education and served a 4-year apprenticeship learning the blacksmith's trade under Captain Benjamin Lawrence. On January 28, 1827, he was married to Demarius Lamb of Granville, Vermont.

During the following decade, John Deere established his reputation as a master mechanic and gained considerable fame as a maker of hay forks and shovels. But a period of misfortune came. Twice his shop burned down. Business conditions in Vermont were depressed. To the ambitious young blacksmith, the future looked very gloomy.

Then came tales of the golden opportunities of the New West. These tales so fired John Deere's enthusiasm that he decided to dispose of his business in Vermont and move to the land of promise. Leaving his wife and family to join him later, he set out with his bundle of tools and small amount of cash. Traveling by canal boat, lake boat, and stage coach, he arrived at Grand Detour, Ill. in 1836.

Two days after his arrival he had set up a blacksmith shop and was repairing a broken mill shaft.

Here he was kept busy shoeing horses and oxen and repairing the plows of the pioneer farmers. Every day he heard the complaint, "No plow will scour in this heavy, sticky soil after the first breaking".

He saw caravan after caravan of landseekers passing through the fertile prairies, pushing on into the timberlands, there to clear the land and establish farms where their crude iron plows would work in the more friable soil.

John Deere, recognizing the enormous wealth of the prairies and the vast agricultural possibilities of the New West, set about building a plow that would scour. He believed that the moldboard and share should be made of steel – shaped in such a way that the surface would clean itself as the plow cut and turned the furrow slice.

On a log, he carved the shape he desired for the moldboard and share of his plow. Then he obtained from Leonard Andrus, owner of the community sawmill, who was to become his partner in business six years later, the only steel available – a piece of a broken mill saw blade. He heated it and shaped the one-piece moldboard and share over the pattern—afterwards hardening the steel to adapt it better for work.

From wrought iron he made the landside and standard, and from white oak he made the handles and beam. Many trials were made on nearby farms. After each trial, the blacksmith carried the plow back to his shop, took it apart and changed the curve of the moldboard to improve the performance of his plow. Day after day, early in the morning and late into the night he toiled – working out his "Great Idea".

Long before the plow was completed, people of the entire countryside were talking about John Deere and his new plow.

Then came the day which was to mean so much to the infant agricultural industry of the New West.

John Deere shouldered his plow, carried it to the river bank, placed it in a boat and rowed across the river to a farm owned by Lewis Crandall, where it was said that no plow would ever scour. While a group of intensely interested farmers looked on, John Deere hitched a borrowed horse to the plow, grasped the handles, spoke to the horse, and the test was started. A clean-cut furrow and a clean-shed furrow slice marked his path. The black, sticky soil shed cleanly from the moldboard. The plow which pioneer farmers knew as "John Deere's Self-Polisher" was a success. Thus did John Deere give to the world the steel plow.

As fast as John Deere could make his plows they were sold to the prairie farmers around Grand Detour. His business continued to grow. Soon the yearly output was 1,000 plows.

In 1847, the 4-year partnership of Andrus & Deere was dissolved and John Deere moved to Moline, where he built a shop, and manufactured 700 plows the first year.

Beginning with a small blacksmith shop in Grand Detour, Ill., John Deere, the pioneer plow builder, through his untiring energy, keen foresight, and executive ability, blazed the way with a clean-cut furrow for development into one of the world's greatest industries.

The implements which bear his name are known and widely used throughout the civilized world—a fitting tribute to the man who gave to the world the steel plow.

Ken Wray is driving a team of three Percheron horses pulling a John Deere binder on his farm at Ford City, Pa. The John Deere binder was made about 1930 and is still used today on Wray's farm.

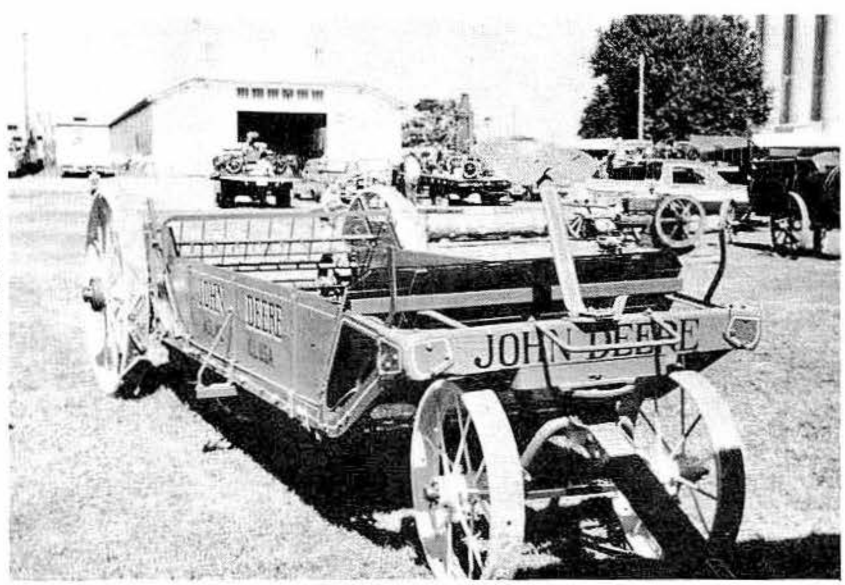
John Deere

This mixed team of 4 horses and 2 mules is pulling a John Deere harrow. Following the Civil War, iron and steel came into more general use and began to replace wood for harrow farmers. Farmers began to hitch three or four sections together to speed up the preparation of seedbeds.

A John Deere wheel rake and a team of horses get together to bring in the hay in Lancaster County, Pa. Although wheel rakes are relatively new, the old type sweep or buck rakes date back to around 1885. The portable hay stacker reached the market about 1882. Among the earliest hay machines on record was a horse-drawn, wooden, revolving rake, invented about 1820.

Five Belgians and one Percheron pull a John Deere disk in Lancaster, Pa. Disk harrows and spring tooth harrows came into use in the late 1860's, but it was not until the latter part of the century that they attained wide popularity. Concave blades for disk harrows were patented in 1877, setting the pattern for one of our most universally used tillage tools.

This John Deere manure spreader, owned by Walter Messick of Harrington, Del., can be seen at the Antique Machinery Show, Delaware State Fair, Harrington. The manure spreader, which has since become a symbol of good farming in livestock areas, came into the record in 1865. This was the first spreader of the wagon type. The endless apron made its first appearance in 1877 on what has been described as the first commercially known spreader.



Chronological Evolution of U.S. Steam Traction Engines

1849 – The early steam engines furnished belt power, but they had to be pulled by horses or oxen. One of the first to be produced in the United States was the Forty-Niner. It was built in Philadelphia in 1849 by A. L. Archanbault in 4, 10 and 30 horsepower sizes. The smallest of these weighed 2 tons, or 1,000 pounds per horsepower.

1850 – The Baker and Hamilton Co. marketed a moveable threshing engine in 1850. The boiler had a jacket of 2-inch staves, held in place by brass bands, and could burn wood, coal, or straw. It had an Ames engine and Luafenburg boiler and was built by the Ames Iron Works of Oswego, N. Y. In this year also, Gideon Morgan of Calhoun, Tenn. received a patent on a wheel substitute. The language of his patent was for an improvement in track-type tractor design; the development of the crawler type tractor in the United States therefore must have begun before 1850.

1854 – Henry Ames was one of very early builders and advocates of steam power on the farm. He founded a factory to make moveable engines in 1854.

1855 – The next step in the evolution of farm power was the conversion of the portable steam engine into a self-propelled steam traction engine. The first one was developed primarily for plowing. Obed Hussey of Baltimore invented and put into operation a "steam plow" in 1855.

1858 – J. S. Fawkes of Christiana, Pa., produced a more successful steam plowing outfit in 1858. Its frame was of iron, 8 feet wide and 12 feet long, and rested on the axle of a roller (driver) 6 feet in diameter and 6 feet wide.

1859 – President Abraham Lincoln, in an address before the Wisconsin State Agricultural Society at Milwaukee, in 1859, said: "The successful application of steampower to farm work is a desideratum – especially a steam plow. It is not enough that a machine operated by steam will really plow. To be successful, it must, all things considered, plow better than can be done by animal power. It must do all the work as well, and cheaper, or more rapidly, so as to get through more perfectly in season; or in some way afford an advantage over plowing with animals, else it is no success."

1867 – R. J. Nunn of Savannah, Ga., patented an "improvement in land conveyance." It was essentially two or more bands running over a series of grooved rollers that were mounted in a frame and driven through a larger roller powered by a steam engine.

1867 – Thomas S. Minnis of Meadville, Pa., patented a locomotive for plowing. According to Hal Higgins, an authority on power farming, "Iowa's first dirt farming tractor was this Minnis Crawler from Pennsylvania that came out to the raw prairie within sight of the new Iowa State Agricultural College as the first students started attending classes within sight of its smoke."

1868 – Philander Standish built the Standish steam rotary plow, the Mayflower, at Pacheco, Cal. in 1868. It was offered for sale in several sizes, ranging from 10 to 60 horsepower. Operating speed was 1.7 to 3.4 miles per hour, and the plowing rate was up to 5 acres an hour. This same year, Owen Redmond of Rochester, N. Y., patented a steam plow.

1870 – A report of the Commissioner of Agriculture in 1870 announced that "a gang of 6 plows, designed to go with the engine has been constructed; intended to be operated by one man, who also might be the fireman." Again, Thomas S. Minnis of Meadville, Pa., patented a steam tractor mounted on 3 tracks – 2 in the rear and one in the front. Each rear track was driven by a steam engine, attached at the rear, through pinion and drive gear.

1873 – Robert C. Parvin of Illinois built a steam tractor propelled by an endless chain of steel plates to which "feet" shod with 2-inch plank, were attached. It pulled 6 plows.

1870's (late) – Many farmers started buying self-propelled steam engines in the late 1870's. During this time, inventors devised a suitable gearing for the rear wheels of portable steam engines of the wheel type and also a chain or belt drive from the engine flywheel to a countershaft of this gearing to provide self-propulsion.

Chronological Evolution of U.S. Steam Traction Engines

1880 – A United States patent was issued in 1880 for a steering devise, although English tractors were fitted with steering gears as early as 1863. There followed the introduction of a clutch and gear train between the engine and rear wheels. The steering gears on these early steamers were not at first considered reliable by some manufacturers, and operators were cautioned about their use on public highways.

1890 – The Stockton Wheel Co. (later the Holt Manufacturing Co.) built its first track-type steam traction engine in 1890. Topography, soil, and large acreages led farmers on the Pacific Coast to accept this type of tractor more readily than farmers in other sections. In this year, about 3,000 steam tractors and almost that many steam threshers were built.

1890's (early) – One of the first attempts to manufacture track-type tractors commercially was made by Alvin O. Lombard of Waterville, Maine in the early 1890s. Another track tractor was the Centiped Log Hauler manufactured by the Phoenix Manufacturing Co. of Eau Claire, Wis. It resembled the Lombard machine, but it used a vertical instead of horizontal engine.

1894 – Several plow manufacturers advertised multiple-bottom steam tractor plows in 1894.

1900 – A one wheel outfit was made by the Best Manufacturing Co. in 1900 for the Middle River Farming Co. of Stockton, Cal. It had 2 wood-covered drive wheels 15 feet wide and 9 feet in diameter. It weighed 41 tons.

1901 – Alvin O. Lombard of Waterville, patented one of the first practical track-type tractors in 1901. He substituted rollers for the balls. He built a workable tractor and sold a number of machines. The unit was "designed specially for transporting lumber and logs over rough roads and over cross country in the Maine woods." The front was supported by runners in winter and wheels in the summer. The power-driven tracks were in the rear.

More than 30 firms were now manufacturing 5,000 large steam traction engines a year. These tractors were improvements over earlier models. The gearing, shafting, and other wearing parts were built to withstand the immense strains imposed upon them in pulling large threshers and plowing many furrows at one time. Big wheat farms and ranches in the Dakotas, Colorado, Montana, Nebraska, Kansas, California and western Canada were using steam traction engines.

1904 – Benjimen Holt successfully demonstrated his first track-type tractor near Stockton, Cal., in 1904 after considerable experimentation, in which he devised a pair of rough wooden tracks that he installed on a steam engine from which the wheels had been removed.

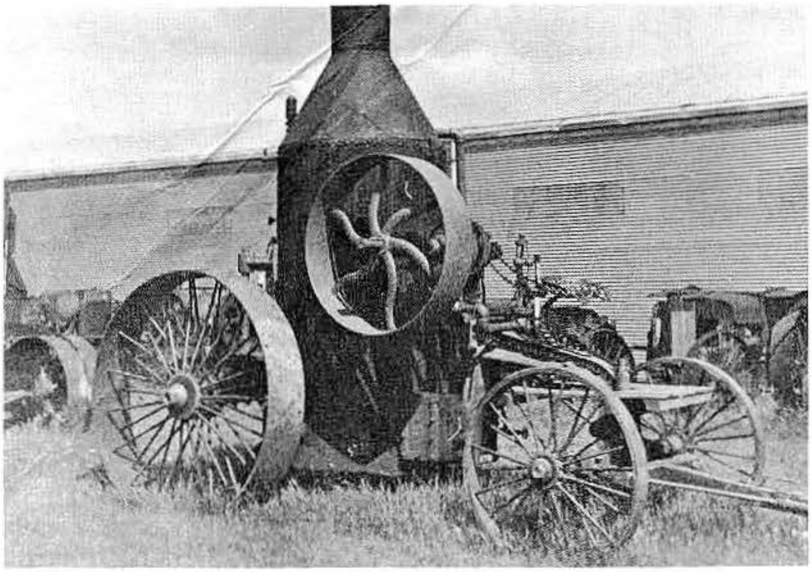
He made use of 3 clutches—the master clutch, for connection the power source, and the track clutches. When the track clutch was released on one side, the power applied through the track clutch on the other side caused the tractor to pivot around the declutched track. Application of brakes on the declutched side increased the speed of turning. This method of transmission continues to be used by the Caterpiller Tractor Co. and has been adopted by most other manufacturers of tracklaying tractors.

1907 – Only 8 of the track-type Holt steamers were built. Holt had already made experiments to replace steam power by gasoline, and one model tractor of the track-type, which burned gasoline, was produced in 1907.

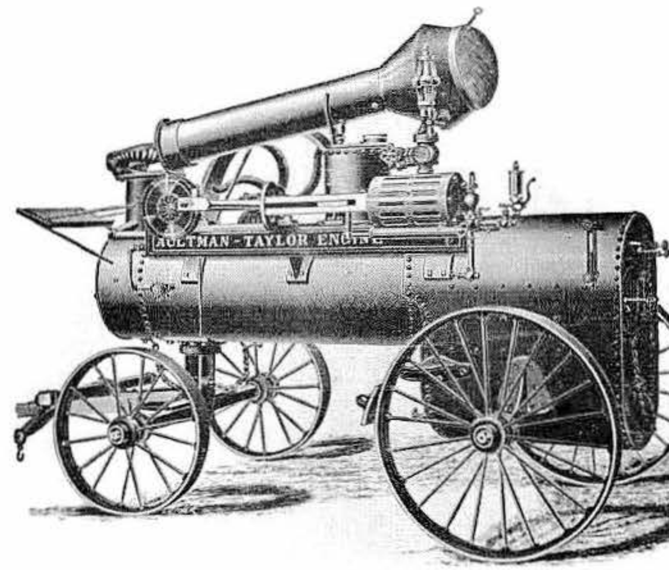
Before the abandonment of the steamer and the acceptance of the gasoline tractor, many improvements had been made, and the performance of the huge self-propelled powerplants was the pride of the traction-engine engineers who pioneered in the ultimate placing of power in the hands of 6 million farmers in this country. Then came the gasoline engine. Early attempts to develop gasoline tractors were sparked by the need to reduce the size of the threshing crews. Such crews included two men to operate the steam engine, two to haul coal and water, two to operate the thresher, a waterboy, and several men to haul bundles to the thresher and the grain away by horses and wagons.

Portable Steam Engines

No one knows exactly when the steam engine was first used for farm power, but it was around 1850. Up to that time, sweeps, treadmills and to some extent, windmills, had been about the only improvement over hand power to operate stationary machines like threshers, feed mills, wood saws and others. These steam engines were stationary, but in the late 1850s and early '60s portable models were introduced to run threshers. At first they were pulled from farm to farm with horses, but later models propelled themselves and pulled the threshers. Still, since a suitable steering gear had not been invented, these machines continued to utilize horses for guidance.

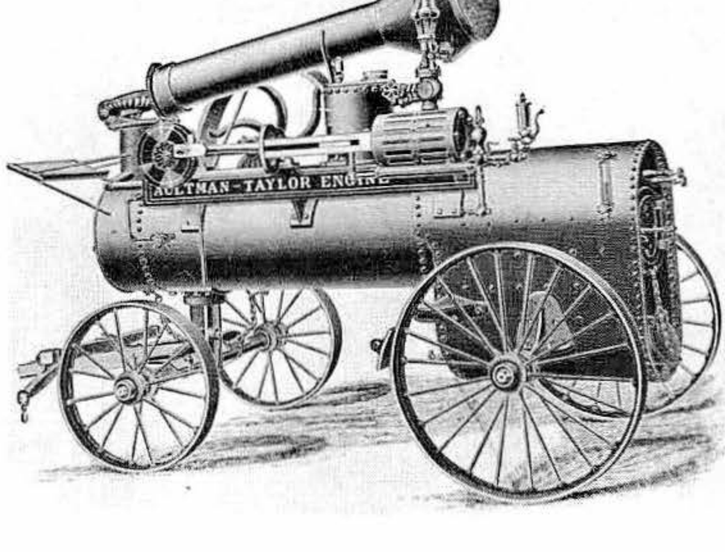


Very rare is the 12 H.P. Canton Monitor steam portable built in 1890 by C. Aultman Co., Canton, Ohio. It is owned by Reynolds Museum, Wetaskiwin, Alberta, Canada. This portable steam engine supplied belt power in 1890, but had to be pulled from job to job by horses.

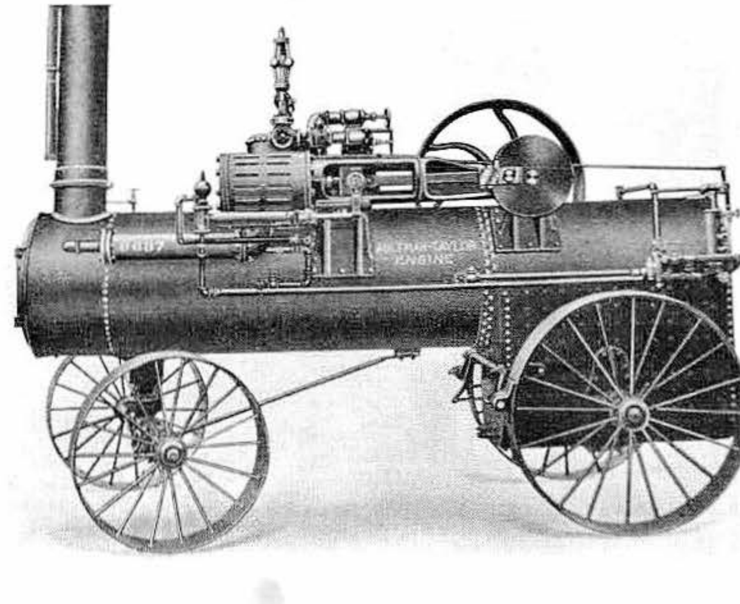


The Aultman & Taylor steam portable engine was built in 1904. This picture was taken from an Aultman & Taylor Machinery Co. catalog. This engine was built in 8 to 20 H.P. sizes.

An Aultman & Taylor steam portable engine built in 1905. Aultman & Taylor Machinery Co. was located in Mansfield, Ohio. This engine was built in 8 to 20 H.P. sizes.

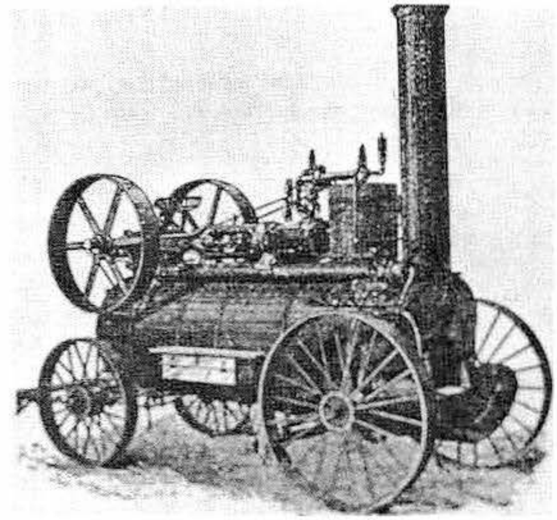


The Aultman & Taylor Hector steam portable engine was built in 1905. This picture was taken from an Aultman & Taylor Machinery Co. catalog. This engine is a 25 H.P., mounted on a high pressure steel boiler.

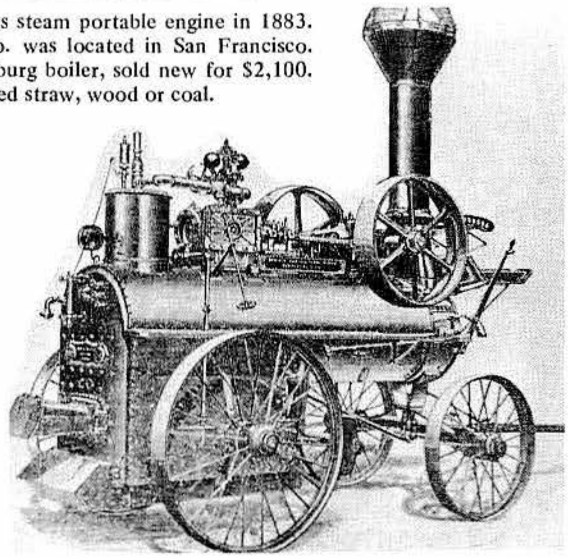


Portable Steam Engines

Baker & Hamilton built this steam portable engine in 1883. The Baker & Hamilton Co. was located in San Francisco. This engine, with a Laufenburg boiler, sold new for $2,100. The Laufenburg boiler burned straw, wood or coal.

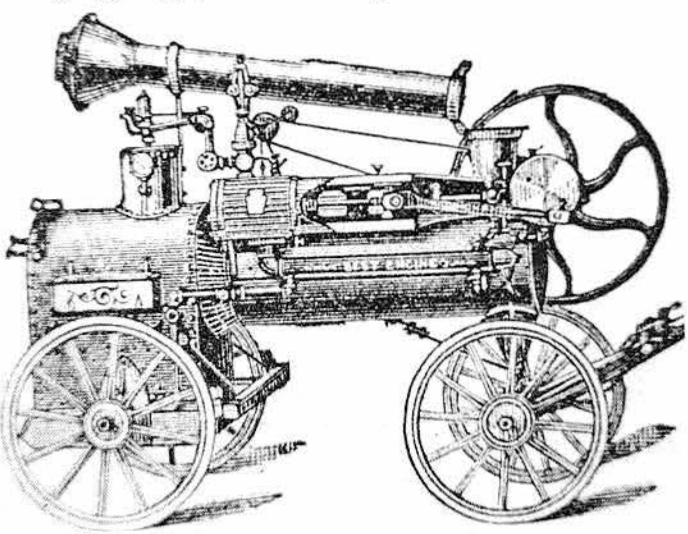


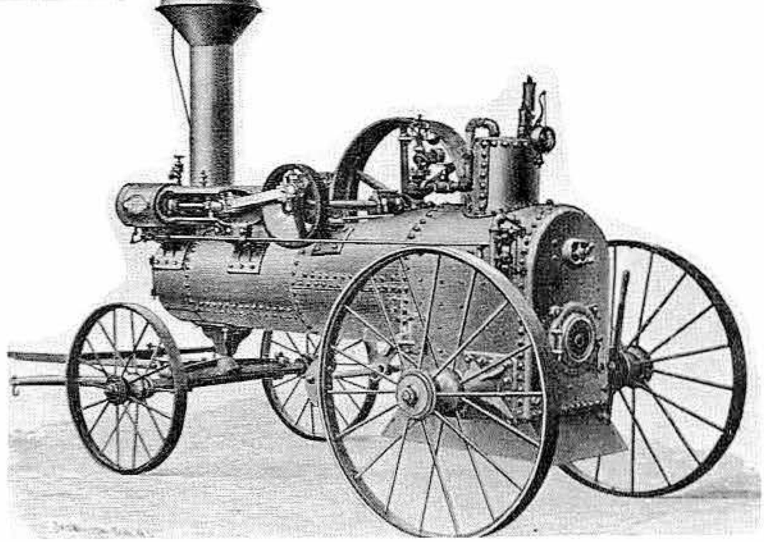
The Bay City steam portable engine was built in 1898. This engine was built by the Bay City Iron Works, Oakland, Cal. It burned coal, wood or straw.



The Benicia steam portable engine was built by Baker & Hamilton Co. of San Francisco, Cal. This engine burned straw, wood, coal or oil. It was mounted on patent iron wheels, having 6-inch tires, had a convenient and substantial brake, and two seats for the driver and firman.

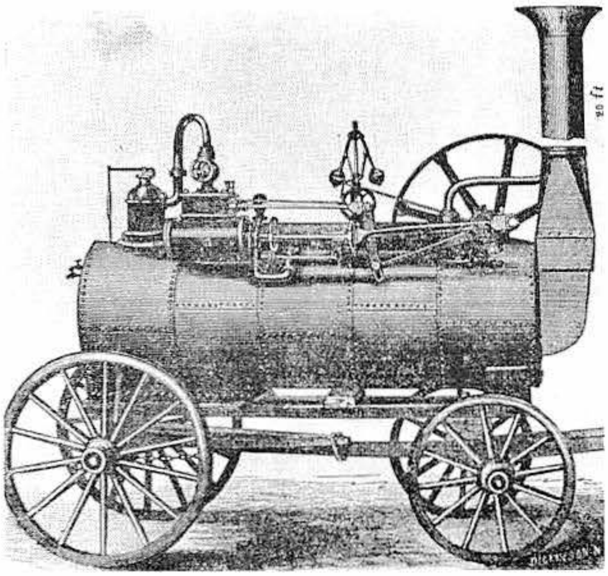
The Best portable steam engine was made in 1889 by the John Best & Son Co., Lancaster, Pa. This portable was made in 4, 6, 8, 10, 15 and 20 H.P. sizes. Best made horizontal, vertical, portable and hoisting engines, light and heavy brass castings, light and heavy iron castings, pulleys, shaftings, hangers, gearing pipe and steam fittings.



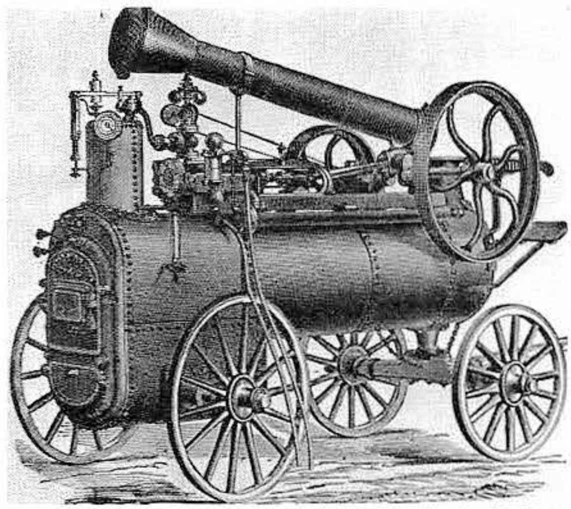


The New Birdsall steam portable engine is pictured in a 1901 New Birdsall Co. catalog, Auburn, N. Y. This outfit, both portable and on skids, was made in 6, 8, 10, 12, 16, 18, 20 and 25 H.P. It is mounted on iron trucks and was provided with pole whiffetrees, neckyoke and serviceable brake, with a seat for the driver in front of the fly wheel on the right-hand side.

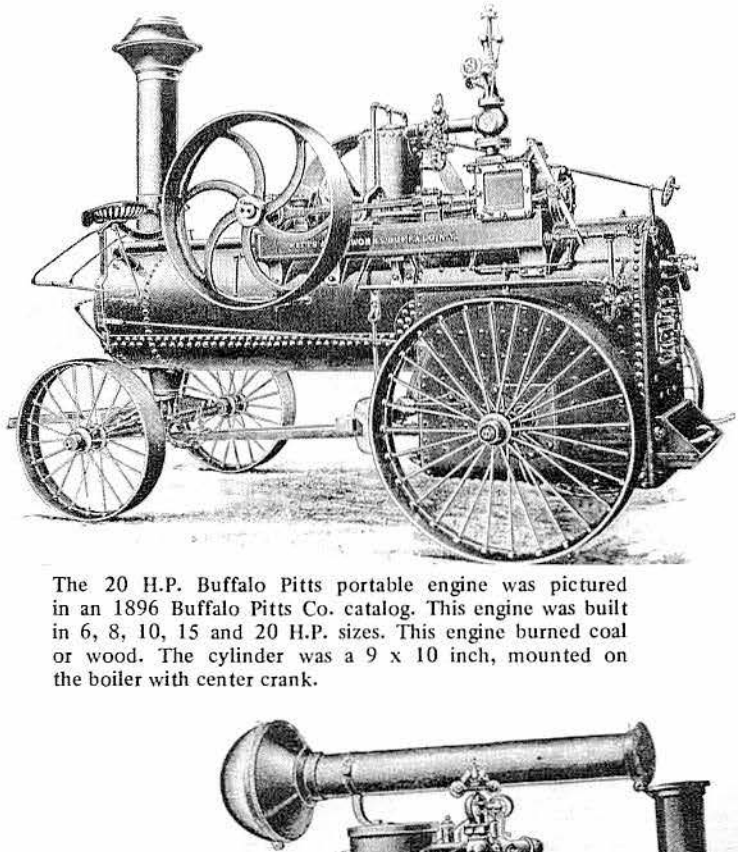
Portable Steam



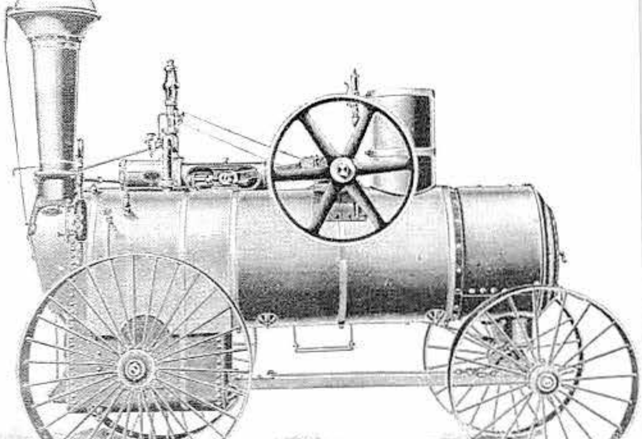
The Blandy steam portable engine was built in 1856 by Blandy Steam Engine Works, Zanesville, Ohio. The 3 H.P. new cost $300 while the 35 H.P. new cost $2,300. Sizes were 3, 6, 8, 12, 15, 20, 25, 30, and 35 H.P.



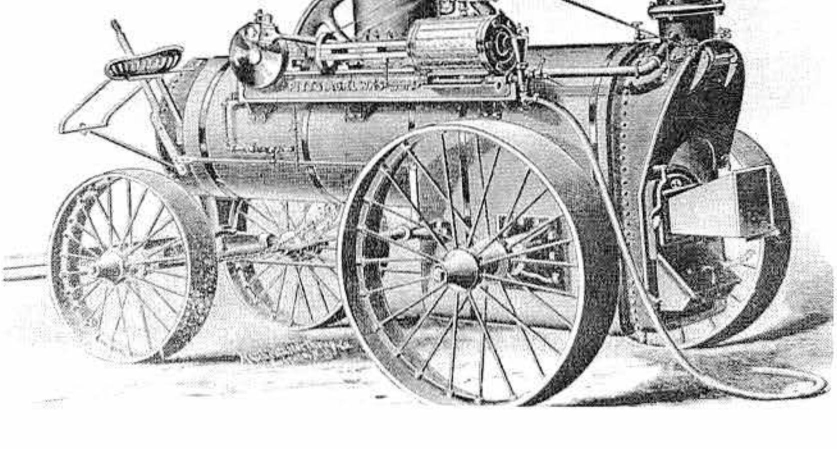
The Blymer steam portable engine was built in 1879 by Blymer Mfg. Co. of Cincinnati, Ohio. These engines were built in 6, 8, 10 and 12 H.P. versions. The 6 to 8 H.P. cost $775, the 8 to 10 H.P. cost new $900, and the 10 to 12 H.P. cost new $1,025. The cylinder and guides were bored together to insure accuracy, and it was impossible for them to get out of line. The steam chest was cast solid with the cylinder, thus saving a troublesome joint. The valve was a slide valve. The cylinder had self-adjusting packing rings. The connecting rod and crank shaft was of hammered iron, and the valve rod and piston rod were of steel. The bearings were large and of the best metal, nicely fitted, and easily adjusted. The pump was fitted with air and vacuum chambers, enabling it to lift and draw water from a distance. The engine was mounted on a substantial bed plate and set on top of the boiler.



The 20 H.P. Buffalo Pitts portable engine was pictured in an 1896 Buffalo Pitts Co. catalog. This engine was built in 6, 8, 10, 15 and 20 H.P. sizes. This engine burned coal or wood. The cylinder was a 9 x 10 inch, mounted on the boiler with center crank.

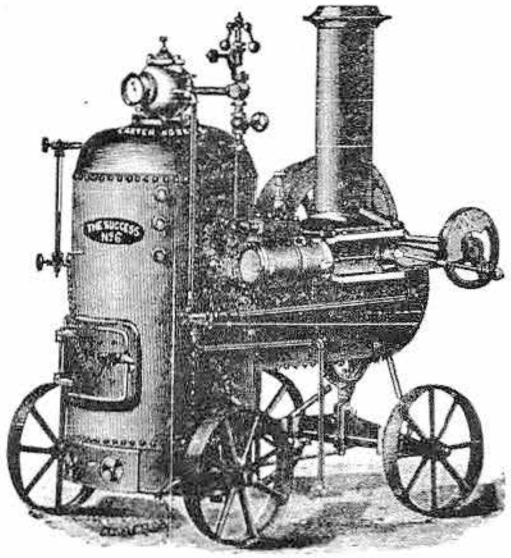


This Buffalo Pitts portable engine was built in 1896 by the Buffalo Pitts Co. of Buffalo, N. Y. This engine is a straw burner. It was built in 14, 16, 20 and 25 H.P. sizes. This is a regular return flue, straw burning boiler. All sizes were fitted with independent steam pump and injector. A driver's seat, convenient side steps for mounting, pole, whiffetrees and neckyoke, were furnished with all portable engines. A wheel brake was furnished when ordered. The 20 and 25 H.P. units had center-crank engines.

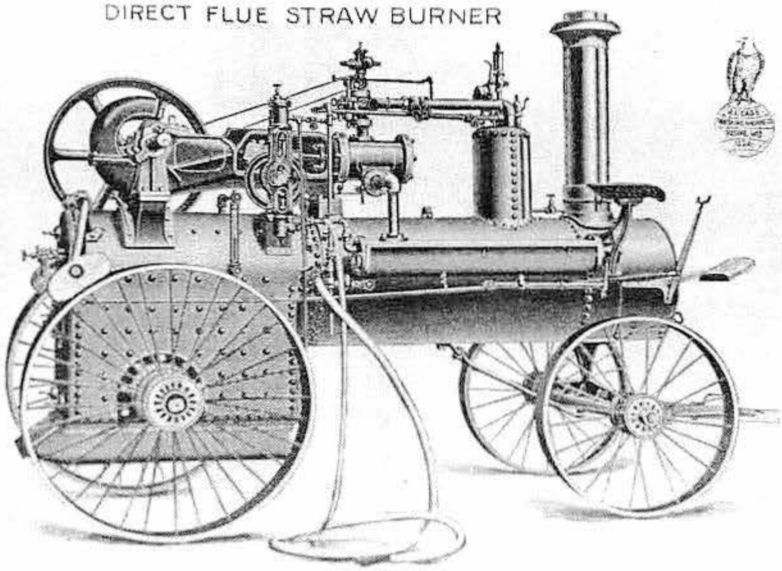


This 16 H.P. Buffalo Pitts steam portable engine was pictured in a 1902 Buffalo Pitts Co. catalog. This engine had a side crank. All the larger sizes had the center crank engines with two band wheels.

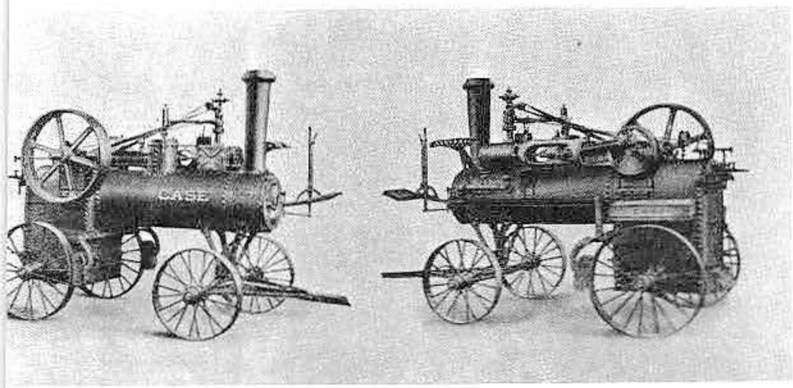
Portable Steam



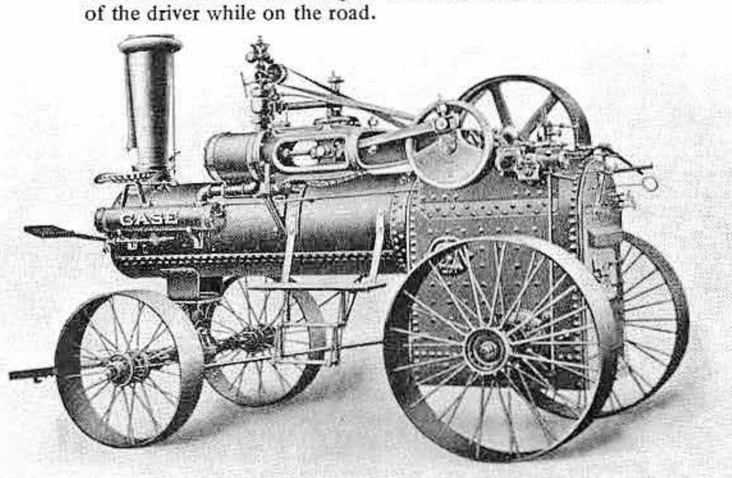
This E. E. Carter steam portable engine was pictured in a 1884 E. E. Carter & Co. catalog. Built in Allecheny, Pa., this engine used a curved flue to avoid expansion. All hearing surfaces were covered with water. It had a soft or fusible plug, in case of low water, and a large safety valve with a two inch opening. This engine cost $350.



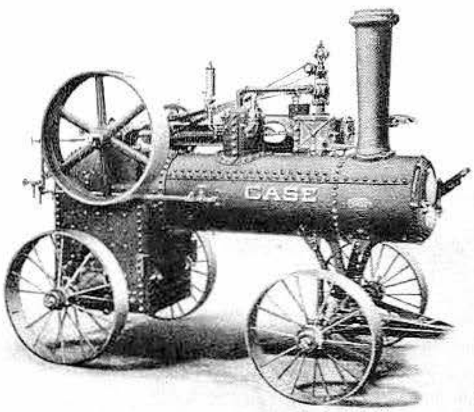
This J. I. Case steam portable engine was pictured in an 1897 J. I. Case Co. catalog. This engine is a coal or wood burner, or a direct flue straw burner. These engines came in 5, 10, 12 and 16 H.P. simple types, and 8, 12, 15, and 20 horsepower compound types. Each engine was furnished with a brake made of wrought iron and supplied with large wood shoes. The brake was connected to the foot lever at front end of boiler. The engine was completely under control of the driver while on the road.



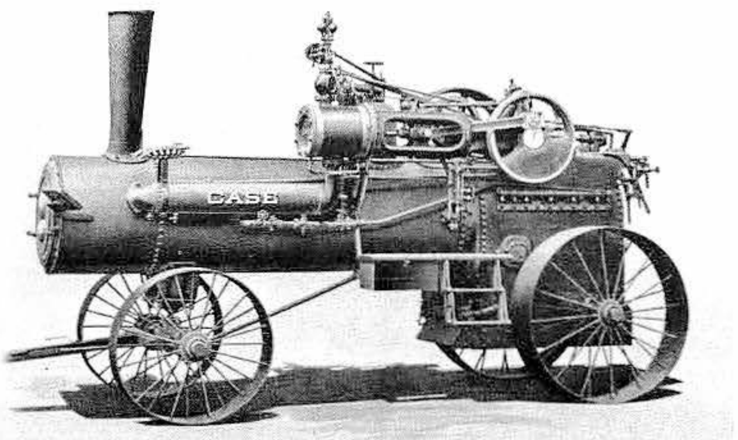
This 6 H.P. J. I. Case steam portable engine was pictured in a 1906 J. I. Case Co. catalog. Built in Racine, Wis., this portable was a 6 x 8 inch cylinder simple engine. This engine weighed, with boiler empty, 4,250 lbs. and cost $475. A 2,400 pound team of horses would handle this engine on the ordinary country road.



The 15 H.P. J. I. Case steam portable engine was pictured in a 1906 J. I. Case Co. catalog. This engine is a 9 x 10 inch cylinder simple. The rear end was supported by steel axle arms which were held by strong brackets bolted to the side sheets of the boiler. The axle arms had bearing in the long hubs of the extra large wheels. The latter were regular steel rims and spoke type with smooth surfaces, sufficiently large to insure easy draft. This engine sold for $850 new.

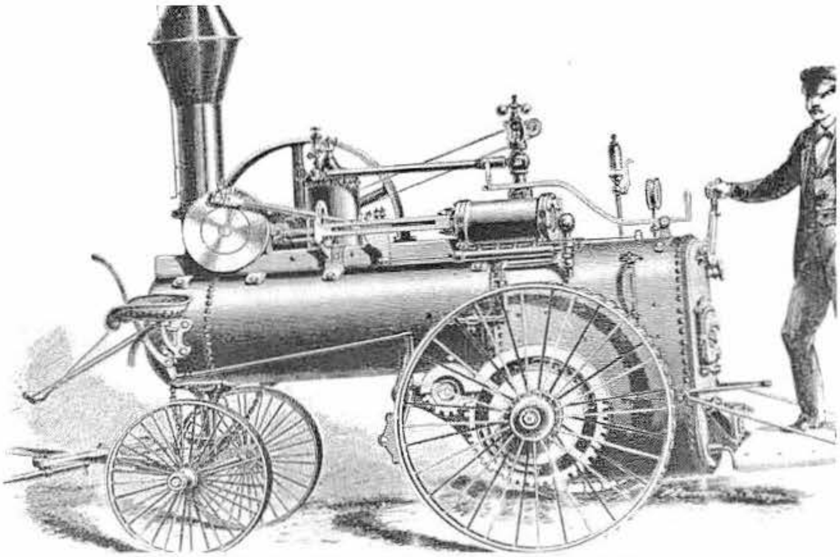


J. I. Case Co. of Racine, Wis., built these portables in sizes from 18 to 80 H.P. With the exception of the 18 and 30 H. P. models, all sizes could be fitted with straw-burning attachment and jacketed boiler at an extra cost of $50.

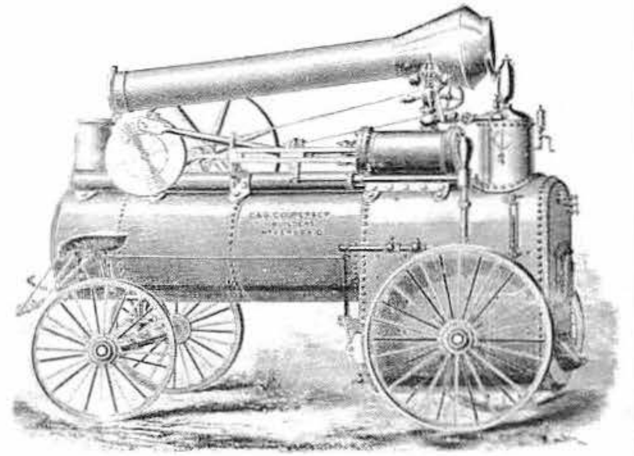


J. I. Case portables were built in sizes from 18 to 80 H.P. The 18 H.P. cost $600 and the 80 H.P. cost $1,300.

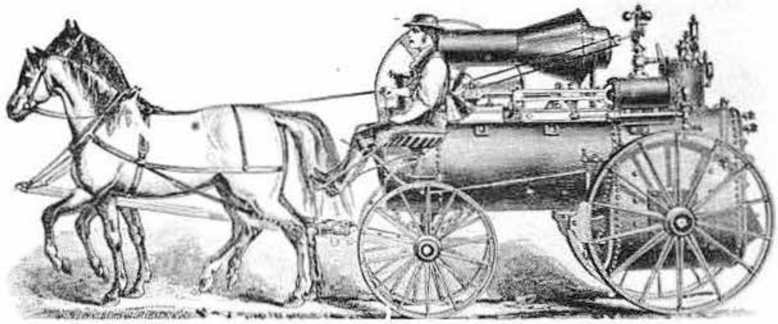
Portable Steam



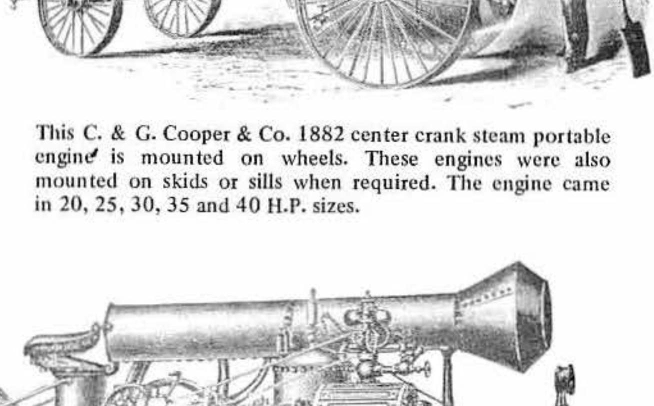
G. & G. Cooper & Co. of Mount Vernon, Ohio, offered this portable in 1882. Iron truck wheels were always furnished with the common farm engine. Parties wanting wooden truck wheels could specify them when ordering. A fire pump attachment was extra.



C. & G. Cooper & Co. of Mount Vernon, Ohio, in 1882 built many of these engines with traction gearing. Most of the customers were willing to pay the difference in cost for the traction gears.

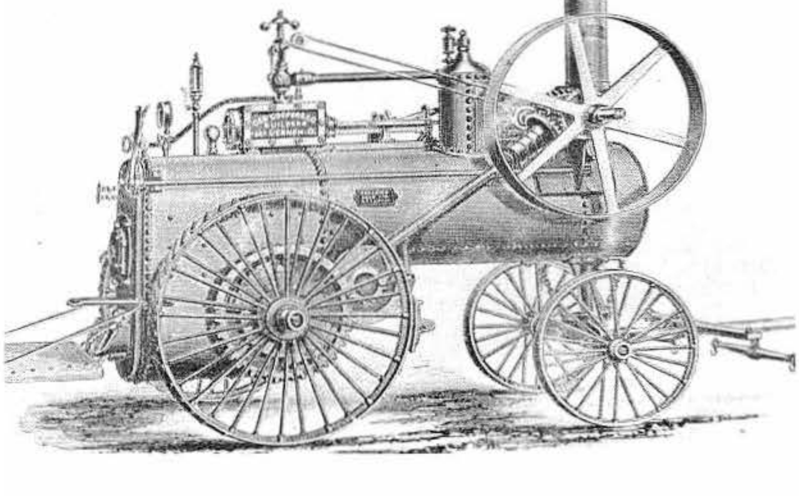


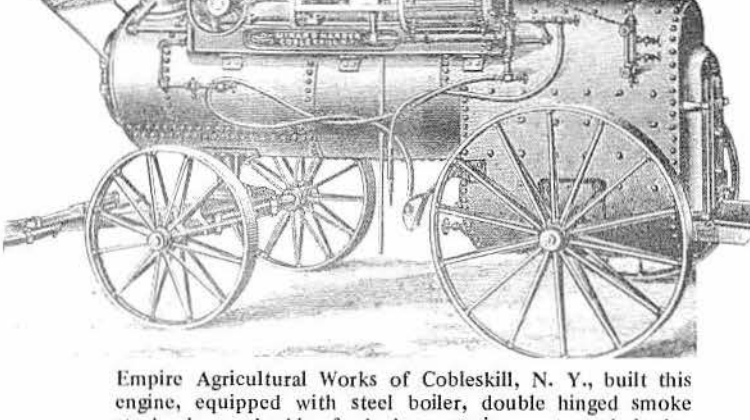
The C. & G. Cooper & Co. steam portable engine was pictured in 1882. Each engine was furnished with a governor, with regulator and belt, a stop-valve, butterfly valve, steam blower, steam gauge, water gauges, brass whistle, blow off, safety valve with regulator, globe oil-cup for the cylinder, self-feeding oil cup for the wearing parts, steam chest, cylinder drain cocks, heater drain pipe with valve, oil can, wrenches, fuel swedge, ten feet of rubber hose, smoke stack with spark catcher, and glass water gauge. Each was fired up and thoroughly tested before leaving the shop.



This C. & G. Cooper & Co. 1882 center crank steam portable engine is mounted on wheels. These engines were also mounted on skids or sills when required. The engine came in 20, 25, 30, 35 and 40 H.P. sizes.

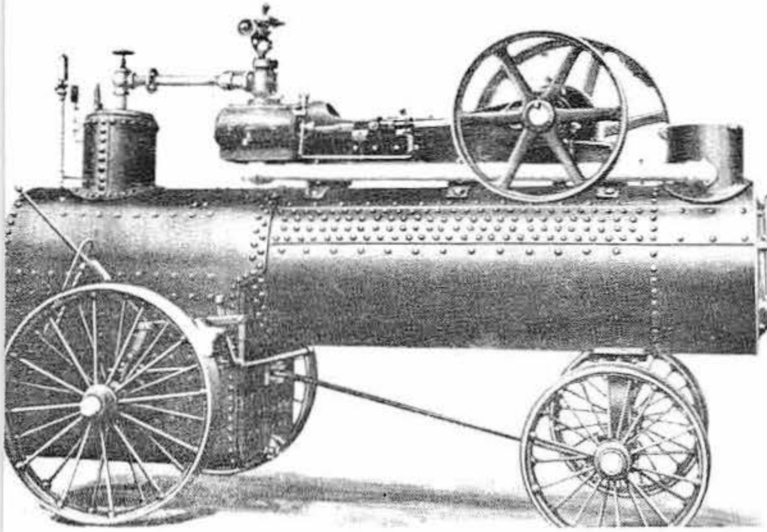
The C. & G. Cooper & Co. in 1882 offered this steam portable engine. The 12 H.P. cost $1,200, the 15 H.P. cost $1,400, and the 18 H.P. cost $1,575.



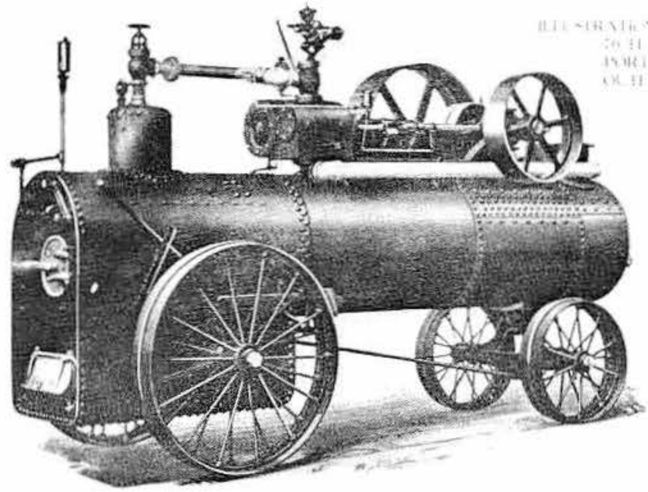


Empire Agricultural Works of Cobleskill, N. Y., built this engine, equipped with steel boiler, double hinged smoke stack, large double feed door, spring seat, and brake. Empires were built in 6, 8, 10, 12, 15, and 20 H.P. sizes.

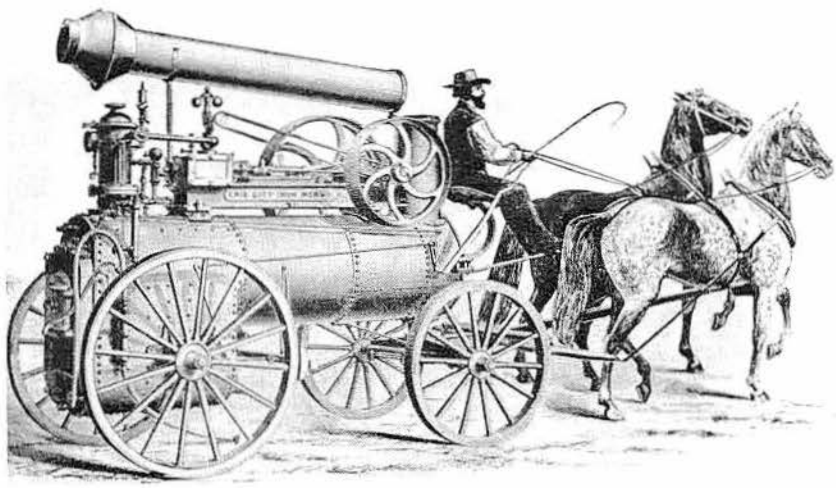
Portable Steam



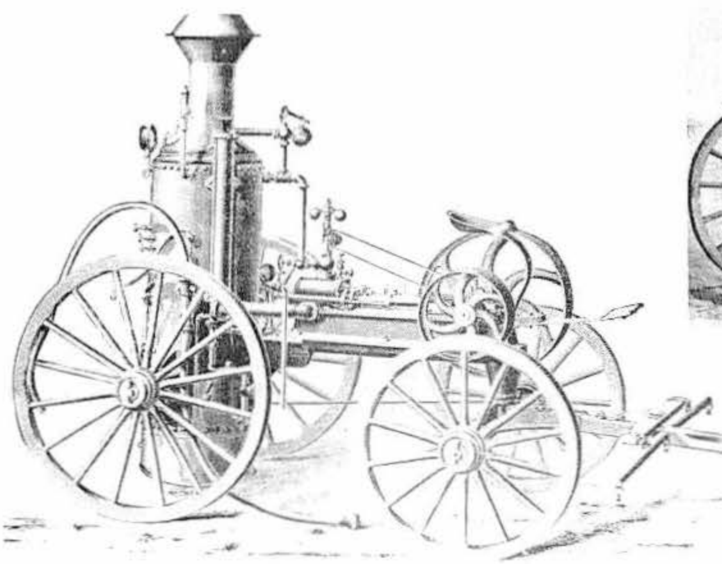
The 16 to 60 H.P. Enterprize steam portable engine was pictured in a 1914 Enterprize Co. catalog. Built in Columbiana, Ohio, this engine could be detached from the boiler and could be mounted on skids on or off the boiler. This engine's fire box was a full water bottom, unusually large and deep for wood fuel. The fire door was placed well to the top so that the fire box could easily be filled when firing. The dome was placed directly over the fire box and was of sufficient size to supply the engine with dry hot steam.



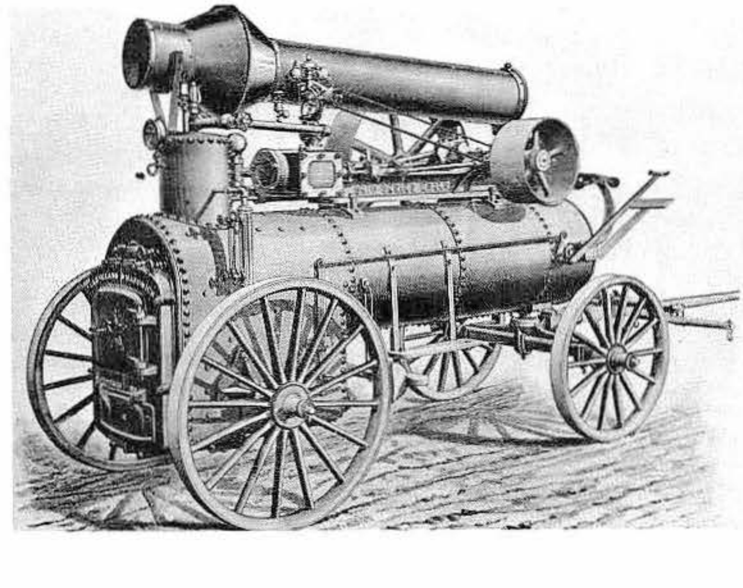
This 70 H.P. Enterprize steam portable engine was pictured in a 1914 Enterprize Co. catalog. Each one of the boilers was tested to 265 lbs. PSI in cold water pressure after assembling. After all parts and fittings were attached, engineers fired each one and carried a pressure of 175 lbs. while the safety valve and steam gauge were set at the pressure. This engine was of center crank construction, with balance discs on the crank shaft. The entire engine was of heavy construction, suitable for high pressure and high-speed operation.



This 6 to 20 H.P. Erie steam portable engine was pictured in an 1874 Erie City Iron Works catalog. This engine is a center-crank, mounted on a portable boiler. Extra heavy oak timber, framed and bolted together, forms its foundation.

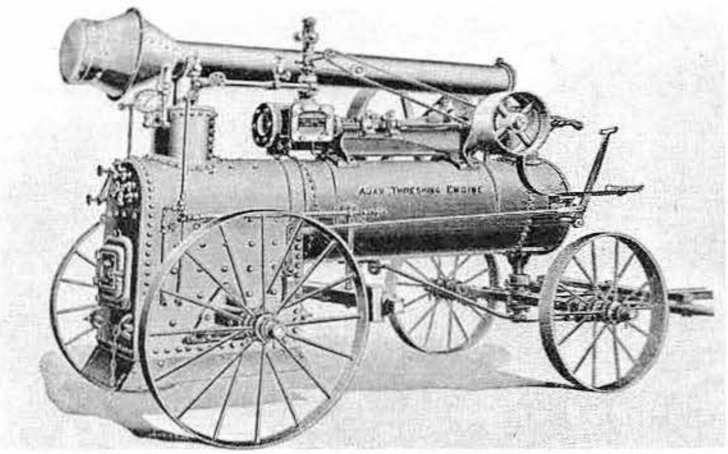


This 5 to 10 H.P. Erie steam portable engine was built in 1874 at Erie, Pa. The detached portable engines were built in six sizes, from 8 horse to 30 H.P. These engines were complete, with the necessary oil cups, steam gauge, water gauges, whistle, gauge cocks, throttle, blow-off, check, stop and safety valve, governor, belt, pulleys, pump and heater.

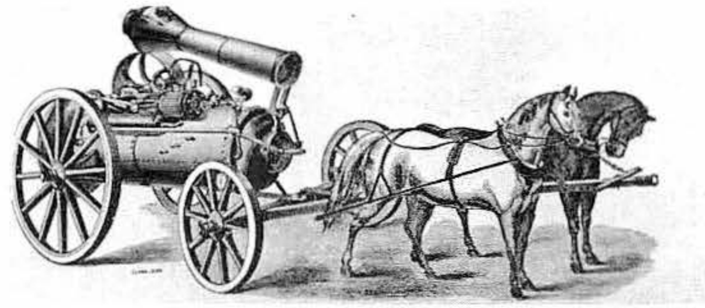


The 6 to 30 H.P. Erie steam portable engine was pictured in an 1888 Erie City Iron Works catalog. The crank shaft was made longer than regular, and extended underneath the boiler, having an out-end bearing on the opposite side. Driving pulleys were placed on each end of this shaft and were interchangeable. The exhaust was taken from the heater through the bottom of the smoke box and into the stack.

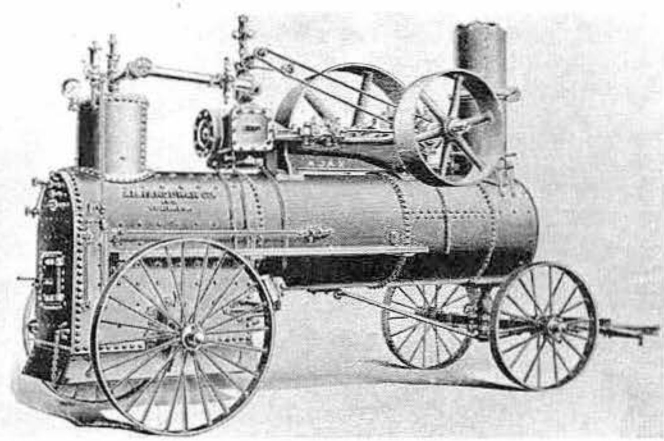
Portable Steam Engines



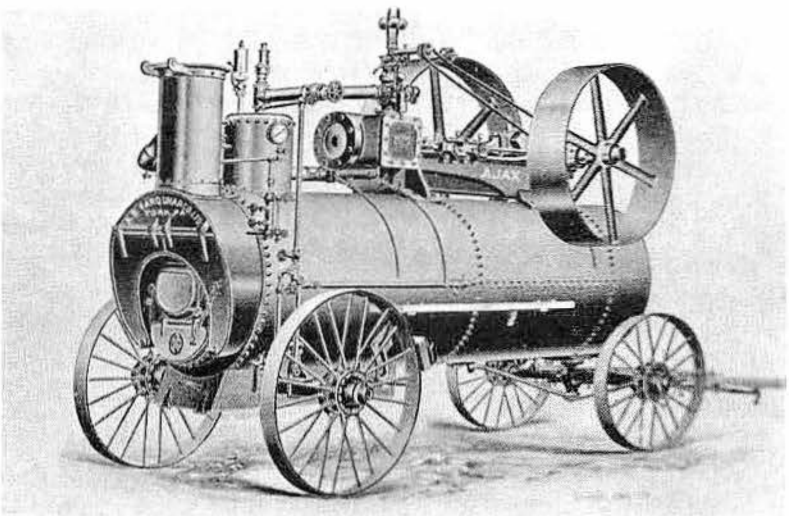
A. B. Farquhar of York, Pa., offered this Ajax steam portable engine in 1903. The cylinder was secured to a bed plate in such a way as to insure the engine to be always in line. It was accurately bored, and had a spring-packed double-ring piston fitted to it, which experience had shown to be the most serviceable and economical when properly constructed. All engines were fitted with injectors. The spark arrester and exhaust nozzle were of an approved pattern. The engine was set very low on the boiler, thus preventing the tendency to over-turn. Driver's seats and foot brakes were put on all Ajax engines.



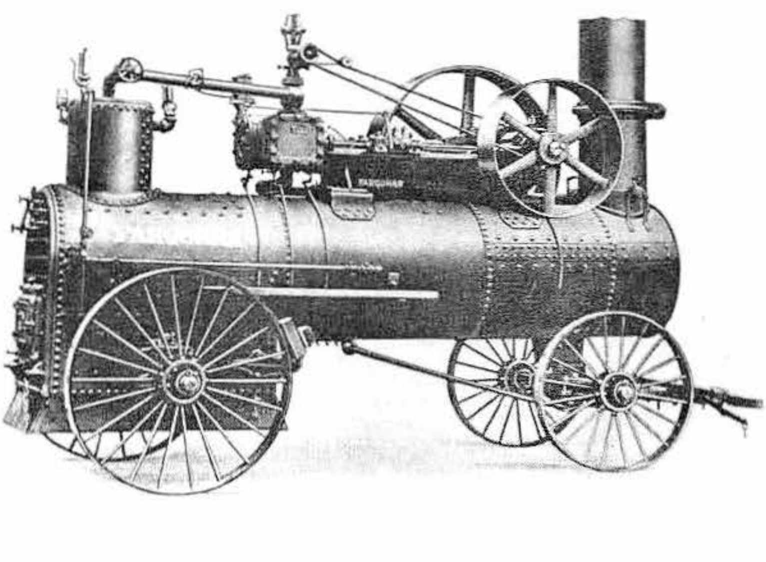
This picture was taken from a 1903 A. B. Farquhar Co. catalog. These engines were complete, with hinged smoke-stack, spark arrester, governor, steam and water gauges, suction hose and everything, in short, that a portable engine should have to be ready for work. In use, this engine stands vertical. The company did not furnish the front wheels, except on order. Front wheels and tongue were supplied at extra price. Engines were furnished with an injector.



The 4 to 50 H.P. A. B. Farquhar steam portable engine was pictured in a 1907 catalog. This was the Style B, improved Ajax center crank engine. All the portable engines were mounted on heavy steel axles and wheels. Steel wheels were always used, unless otherwise specified. Wood wheels with steel tires could be furnished at the same price, if so desired and stated in the order. Each engine was furnished with a tongue, including breast chains and whiffletrees, hand brake, smoke-stack, one ejector, governor, governor belt, and all necessary fittings and fixtures, ready to fire up.

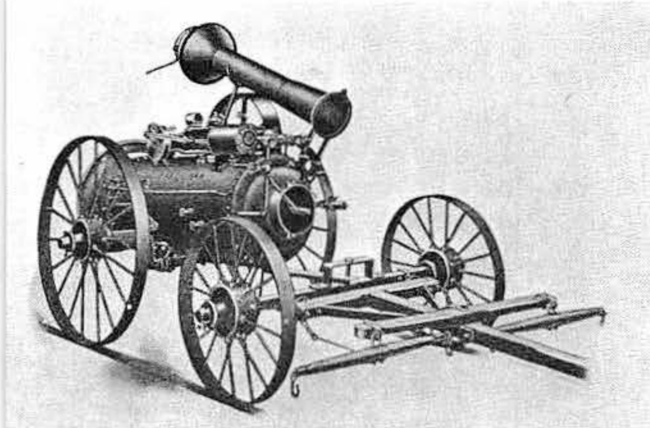


The 12 to 50 H.P. A. B. Farquhar steam portable engine was pictured in a 1907 A. B. Farquhar Co. catalog. This engine used the Cornish boiler. The engine was the standard improved Ajax center crank. The fire box extended through the boiler and was specially suited for burning wood, corn stalks and straw. The company did not recommend this boiler for coal.

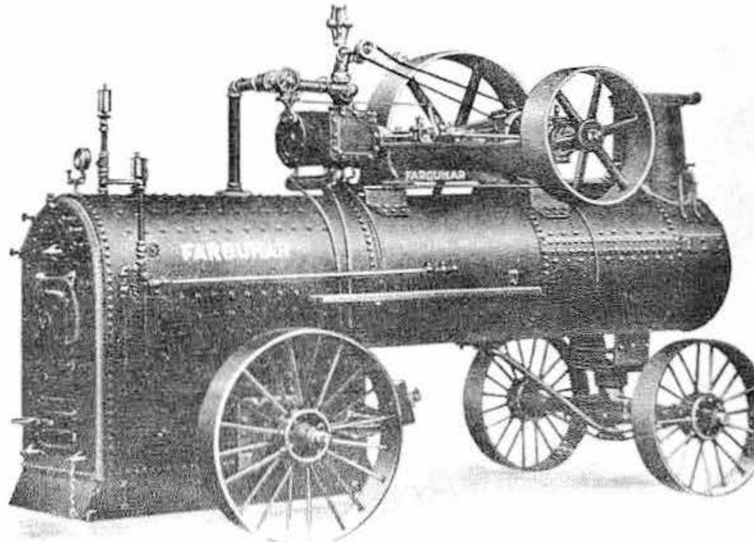


A. B. Farquhar's Style B rig was a center crank on a locomotive boiler on wheels. Regular equipment with the locomotive boiler included grates, stack saddle, stack damper up to and including 40 H.P., one safety valve up to and including 40 H.P. units, two safety valves on 50 H.P. and larger models, gauge cocks, blow-off valve, water gauge, blower, steam gauge, smoke box, ring and door, fire door, flue cleaner, poker, ash pan up to 60 H.P. models, tongue, whiffletrees, and hand brake on the styles G and B.

Portable Steam Engines

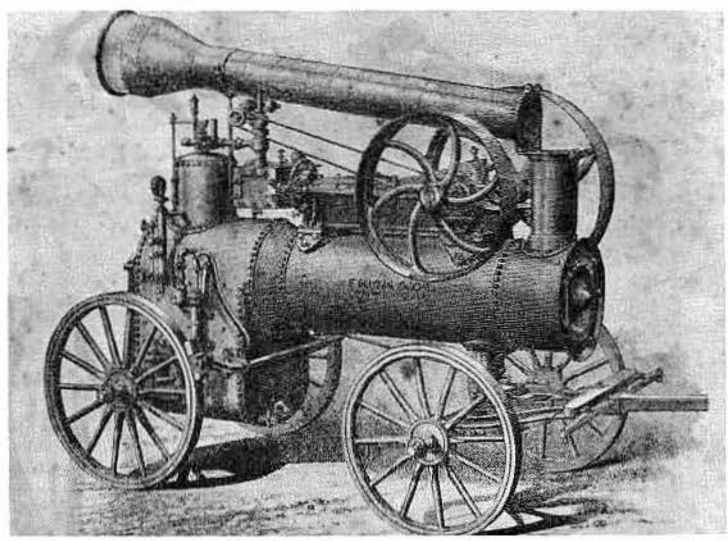


The 3 to 10 H.P. A. B. Farquhar steam portable engine was built in 1907 by the A. B. Farquhar Co. of York, Pa. This vertical mounted rig was exactly like the regular side crank engine, but mounted on a vertical tubular boiler. The vertical engine and boiler made a very desirable rig where economy of space was necessary.

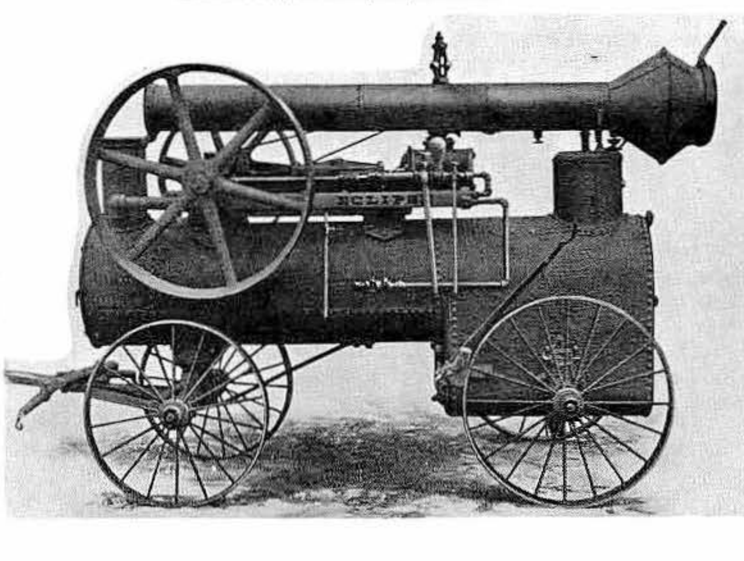


A. B. Farquhar Co. of York, Pa., offered this Style S rig, a center crank engine on a deep fire boiler on wheels. Some of the regular equipment with locomotive deep fire box boiler, included a smoke stack, spark arrester, injector, jacketing, and an oil burning attachment.

In the background is a 20 H.P. A. B. Farquhar portable steam engine running a saw mill. In front is Harvey Studebacker's ½-Belgian ½-Percheron team of horses. The team weighs about 3,200 lbs., and are 11 and 12 years old. They are hitched up to Charles McMurry's water wagon buitl in 1928. When it came time to move to another job, the team of horses would pull the portable steam engine and the water wagon, and if threshing, pull the threshers also. Harvey Studebacker, owner of this team, is sitting on the water wagon. This action took place at the Northwestern Pa. Steam Engine and Old Equipment Assn. show in Portersville, Pa.

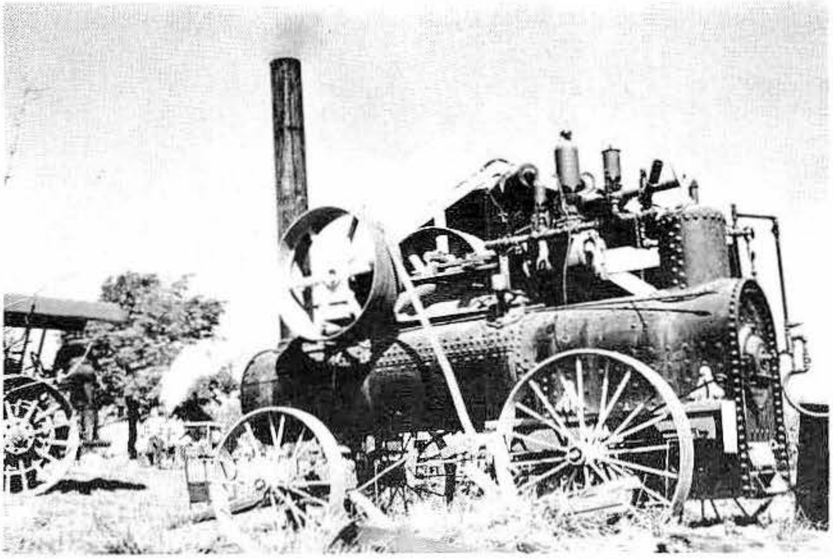


This picture is from an 1878 Frick Co. catalog. This engine got the highest centennial award and special mention by the U. S. Centennial Commission, in the International Exhibition, Philadelphia, in 1876.

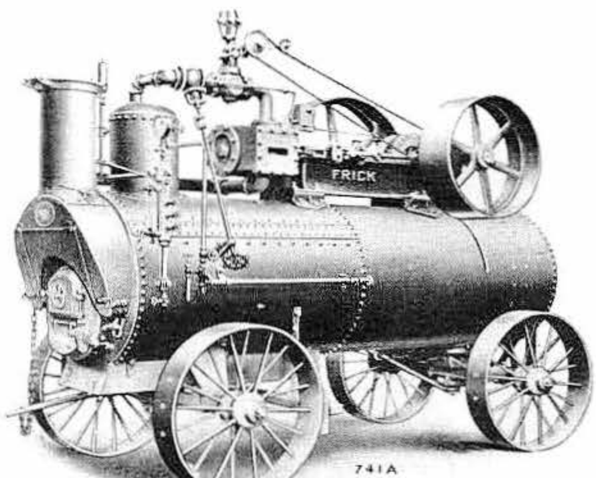


The 4 to 15 H.P. Frick steam portable engine was built in 1906 by the Frick Co. of Waynesboro, Pa. This engine's traveling wheels were large and powerful, and made entirely of iron. The boiler was suspended on springs for traveling, which were let down when at work. There was a powerful brake on the hind wheels, very useful for staying the engine when at work. The engine was carried on top of the boiler, resting on a powerful bed plate, which was hollowed out to form a receptacle for oil leakage. This could be detached from the brackets and the engine converted into a fixed horizontal engine, if required.

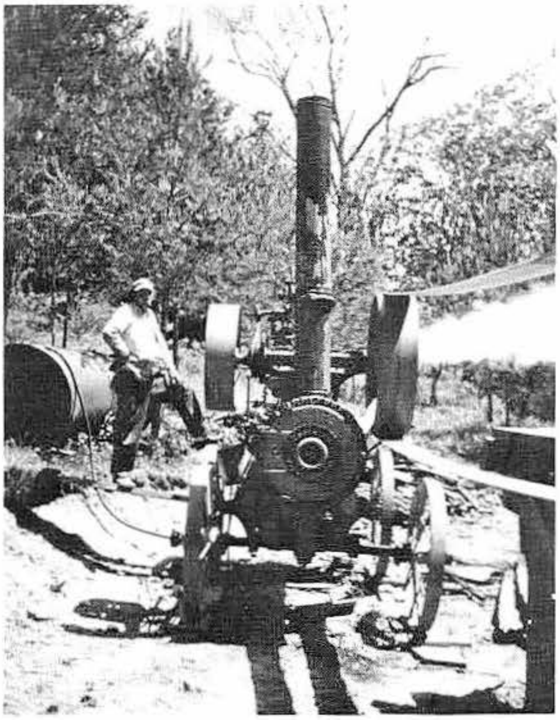
Portable Steam



A 50 H.P. Frick steam portable engine, built in 1924 by the Frick Co. Waynesboro, Pa., owned by Raymond Widman of Martinsburg, Pa. This engine appears at the Morrison's Cove Pioneer Power Reunion, Martinsburg, Pa.

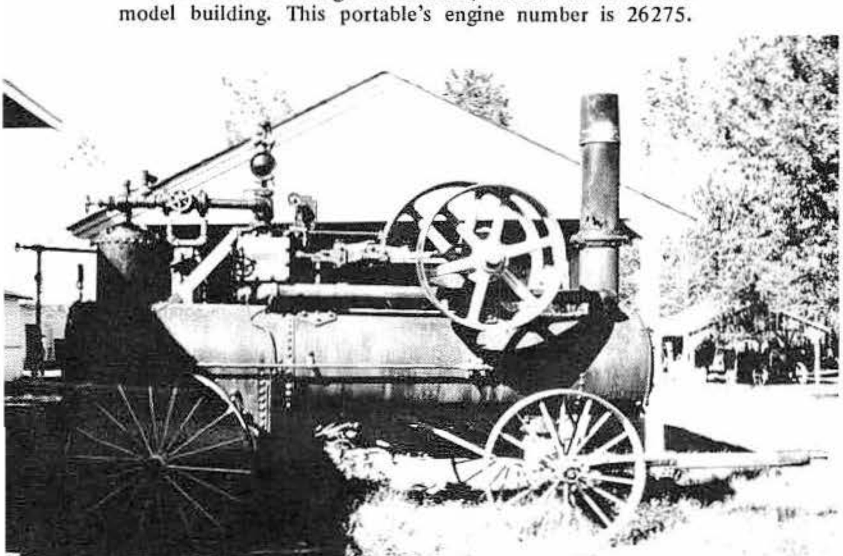


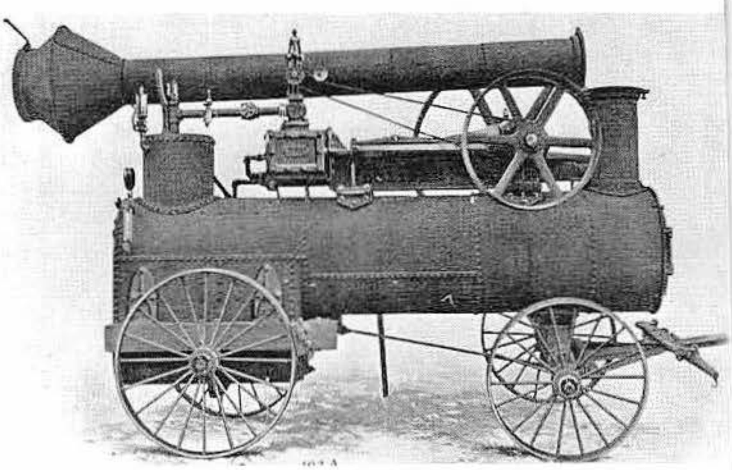
A Frick 50 and 65 brake H.P. improved center-crank engine with a slab burning return flue boiler of 150 pounds working pressure. This engine was conveniently fired with slabs, mill offals and other cheap fuel, requiring little or no preparation. The fire or slab-burning space was a heavy fire-box steel flue, 24 inches in diameter, entirely surrounded by water, extending all the way through the boiler to a large, completely water lined combustion chamber. From this point, the heated and burning gases are returned again, a second time, through the water—this time through 2-inch charcoal iron tubes, effectively and uniformly radiating the heat resulting from practically complete combustion. The tube heads were stayed by 3 crow-foot braces each. Hand holes in the heads and shell were so located to facilitate cleaning and flushing. The engine had a reinforced bed at the crank pillow blocks, balanced valve, adjustable valve-rod guide, 2 piston packing rings, force-feed oil pump, Penberthy injector, pickering bell ranger governor, steam and water gauges, gauge cocks, safety valve, blow-off valve, whistle, tongue, double and single trees, breast chains, brake, fire irons and tools furnished as regular equipment. This picture was taken from a 1925 Frick Co. catalog.



This 36 H.P. Frick steam portable engine, built in 1924 by the Frick Co. Waynesboro, Pa., is owned by Carl Campbell of Mansfield, Pa. Art Taylor is running the Frick portable, working the saw mill. The portable was called the Eclipse, and was made in 20 to 50 H.P. sizes.

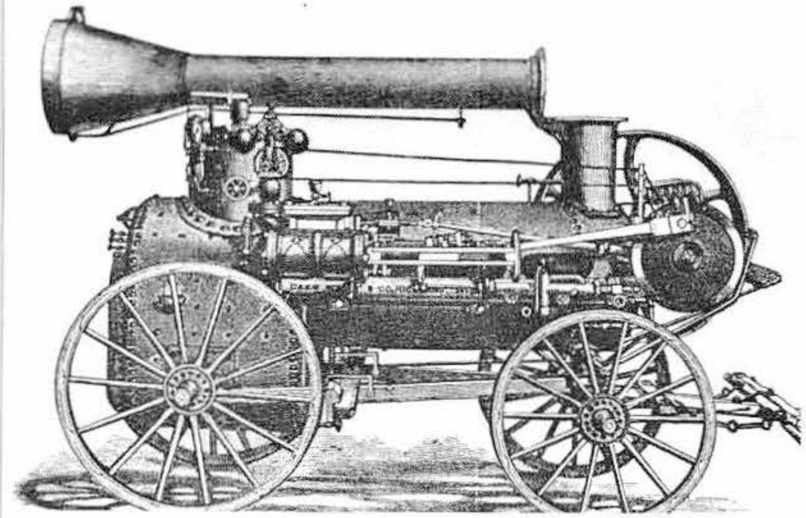
A 50 H.P. Frick steam portable engine, built in 1924 by the Frick Co. Waynesboro, Pa., owned by Rough and Tumble Engineers Historical Assn. of Kinzer, Pa. This Frick portable is a 9½ x 10 inch and is used to make steam for the steam models to run at the show every year. The author is a member of Rough & Tumble, which has a steam model building. This portable's engine number is 26275.



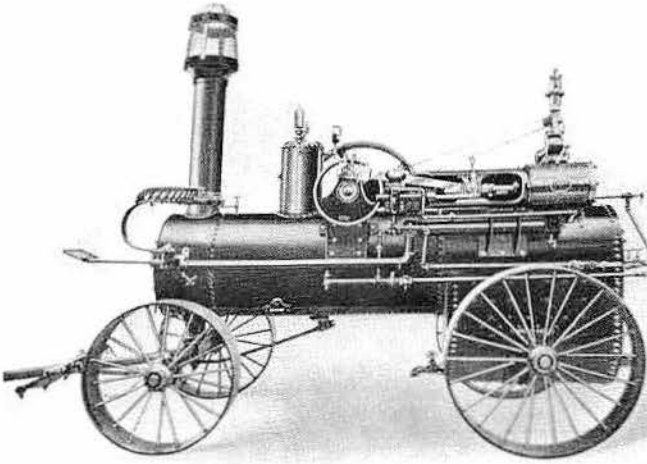


The 20 to 40 H.P. Frick steam portable engine was pictured in a 1906 Frick Co. catalog. This portable was named Eclipse. In the larger sizes, the company used a new method of mounting the boiler on sills, giving great strength and stiffness. The engine and boiler were the same as the 4 to 15 H.P. models. The truck wheels could be taken off and the outfit set down on the sills.

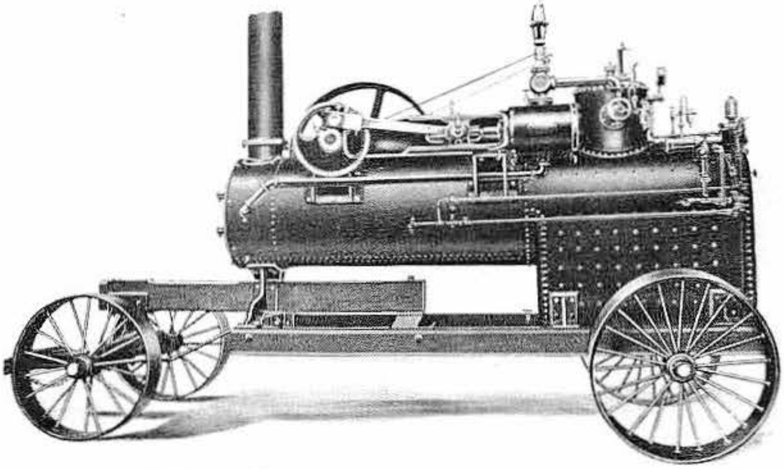
Portable Steam Engines



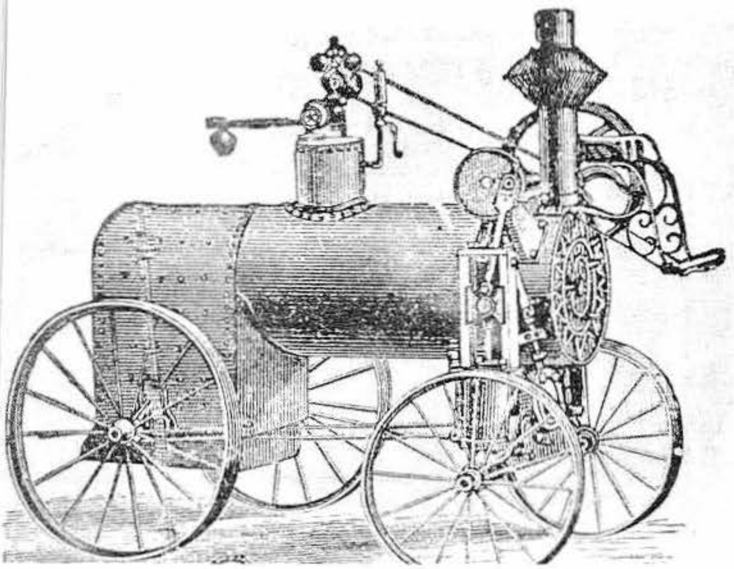
The 8, 10, and 12 H.P. Gaar Scott steam portable engine was pictured in an 1875 Gaar Scott Co. catalog. This engine used a circular fire box boiler. The circular form of the fire box allowed the sediment to settle easily to a point convenient to a blow-off cock, and thus was readily thrown out of boiler in blowing off, or could readily be removed by scraper. The company used a large wrought iron dome for supplying dry steam. Inserted in the crown sheet of all the boilers was a fusible plug, the center of which would melt out the moment the crown sheet was bare of water, discharging steam and water into the fire and thus rendering explosions and injury to the crown sheet impossible.



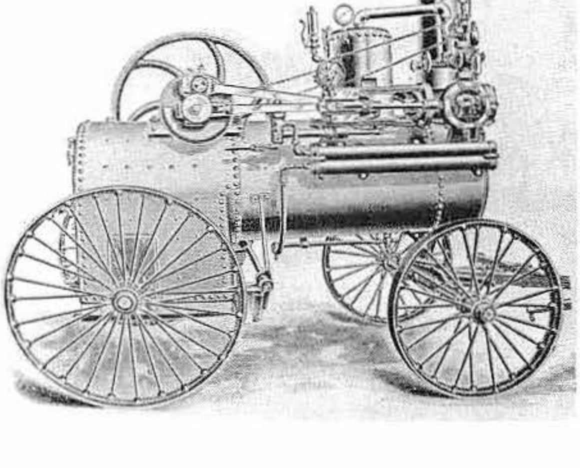
Gaar Scott showed this steam portable engine in its 1908 catalog. The Richmond, Ind. company built this engine in 13, 16, 18 and 20 H.P. sizes. The band wheel of the 6 H.P. engine was on the left side. On all larger engines the band wheel was on the right hand side. Brakes were extra and furnished only when ordered.



This Gaar Scott steam portable engine was pictured in a 1908 catalog. This engine is a 35 and 50 H.P., with the regular style of mounting on skids and wheels. With this mode of mounting the engine on skids and wagon, the wagon could be used to move the engine from place to place, and then be easily removed and the engine set in place for use on the sills.



The Griffith & Wedge steam portable engine was built in Zanesville, Ohio. Griffith & Wedge made all kinds of stationary engines, from 6 to 150 H.P., and also general saw and grist mill machinery, and propellers for canal and river boats. The company also did business in furnishing mills complete with steam engines.



The Harrison "Jumbo" steam portable engine is pictured in a 1902 Harriosn Machine Works catalog. The Belleville, Ill. company built this engine in sizes of 10, 12, 14, and 16 H.P., mounted on wheels or skids. These engines were specially noted for simplicity and durability, as well as great power in proportion to the horsepower rating.

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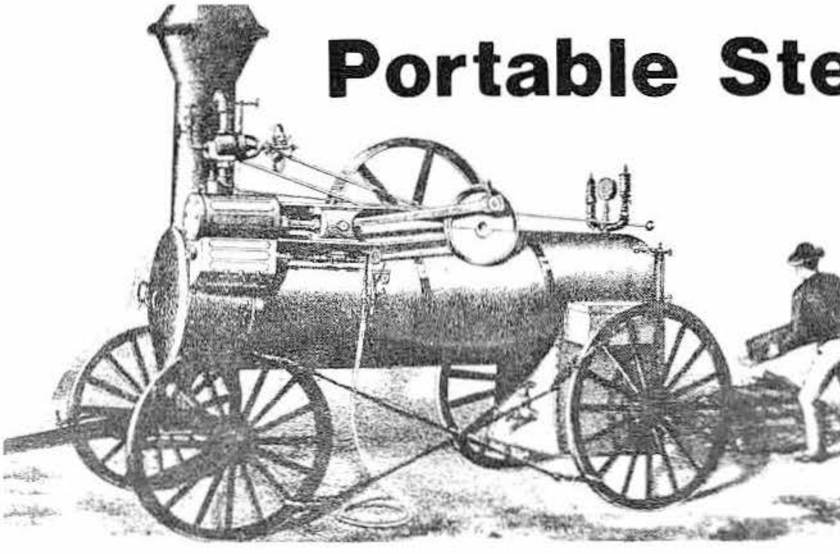
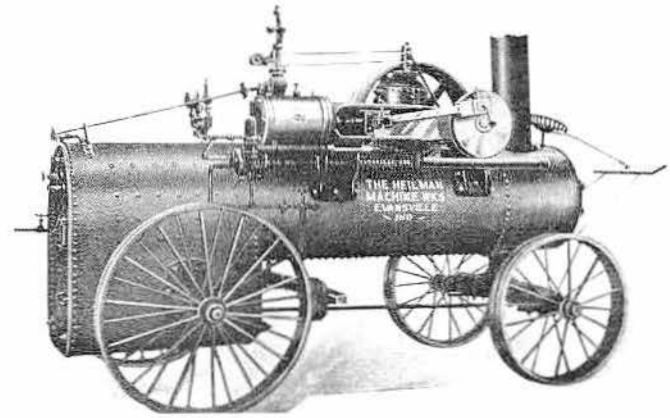
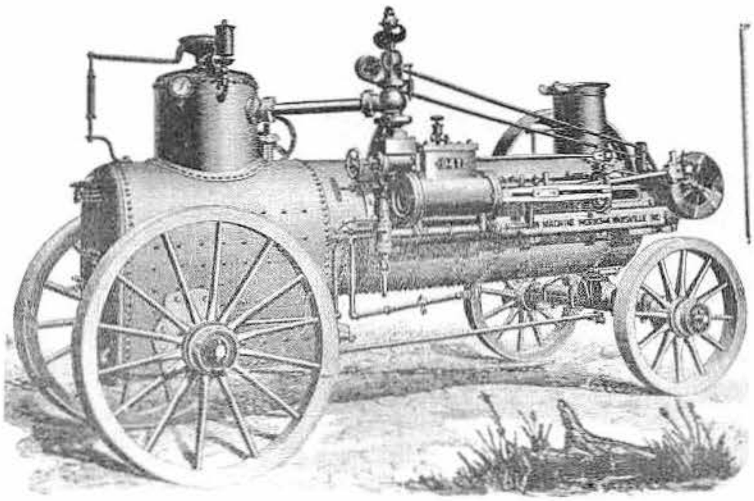


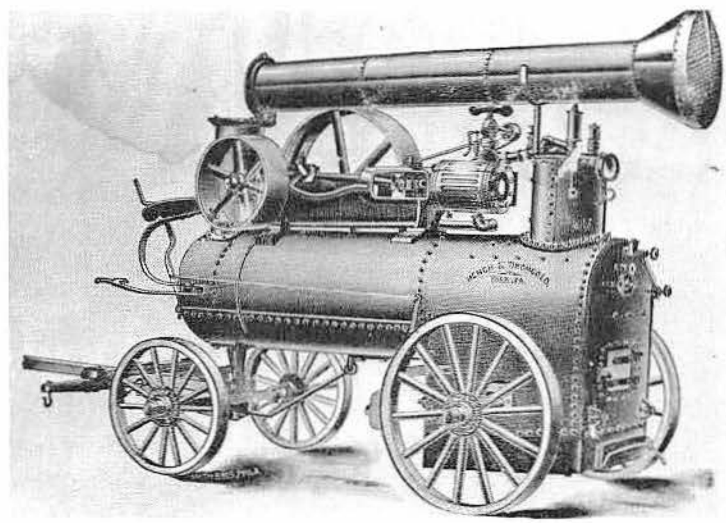
The Cornell steam portable engine is pictured in a Haggert Bros. Mfg. Co. catalog. The Haggert Bros. Mfg. Co. was located in Brampton, Ontario, Canada.



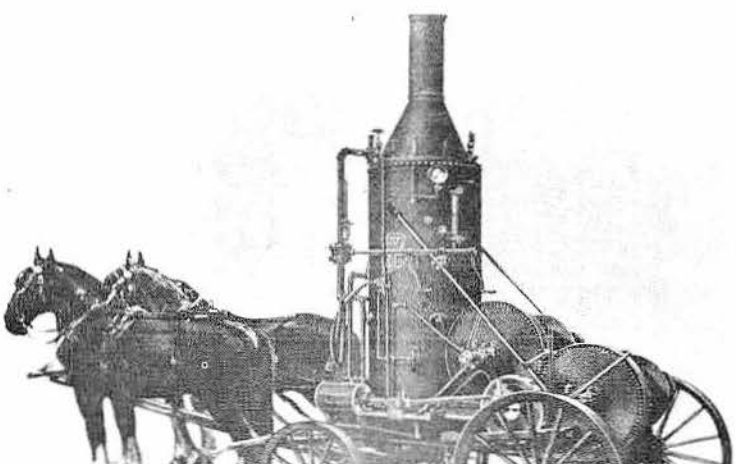
The 25 H.P. Heilman steam portable engine used a round bottom fire box boiler. This boiler was made of flange steel throughout (any plate could be bent back cold without fracture). It had hand holes at the lower corners for easy cleaning, and one over fire door for filling the boiler.



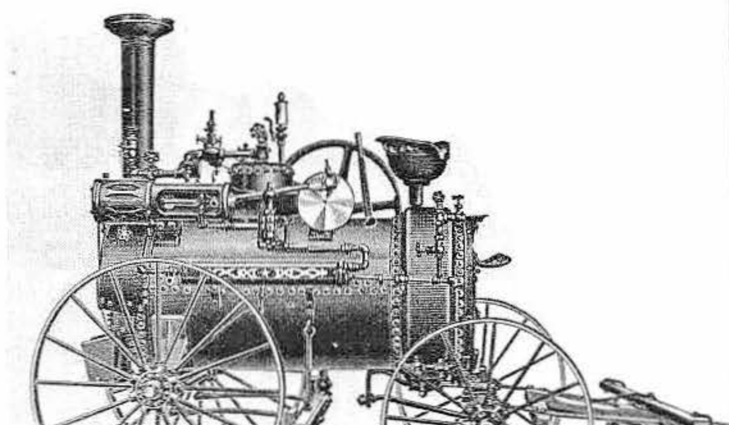
The 15 to 40 H.P. Heilman steam portable engine was built by Heilman Machine Works, Evansville, Ind. This engine used the locomotive type boiler. It is a side mount, with a folding smoke stack.



The 4 to 40 H.P. Hench & Dromgold steam portable engine was built in York, Pa., in 1906. This engine was built on wheels, skids, or detached. The company also built return tubular or Cornish boilers and larger size engines.



In 1910, American Hoist & Derrick Co. of St. Paul, Minn., built this portable hoisting steam engine. Great pains were taken in making a heavy, substantial wheel and axle for rough usage.



The 5 H.P. Huber steam portable engine was pictured in a 1902 Huber Mfg. Co. catalog. This engine weighs about 3,000 lbs. It is the smallest portable that Huber made that year. It was called the Baby Huber.

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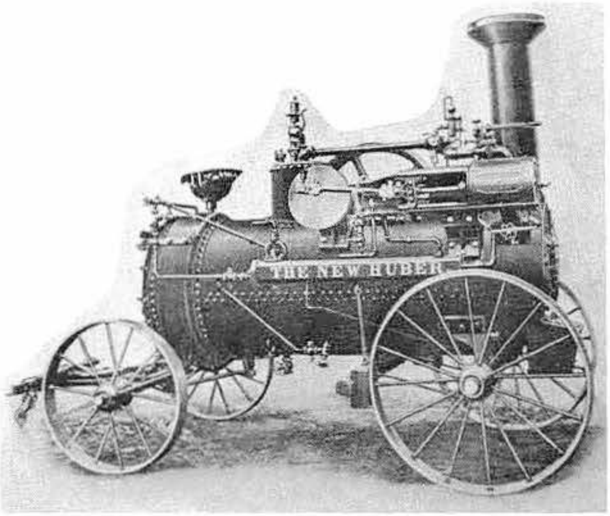
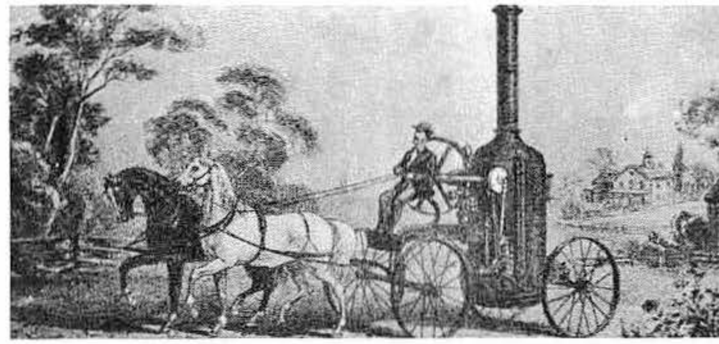
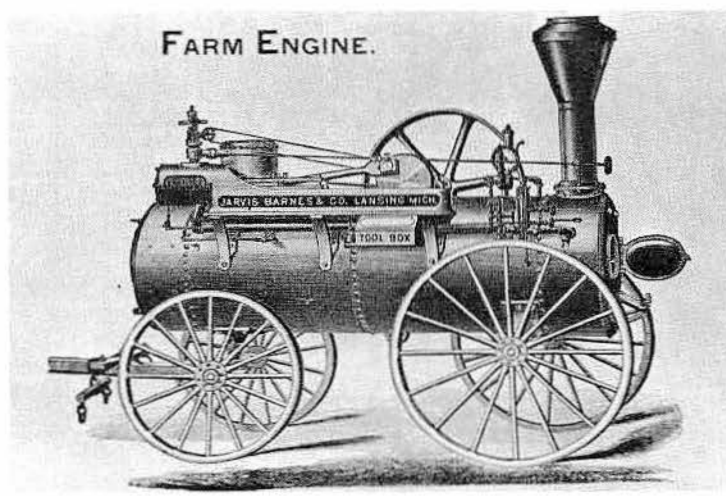


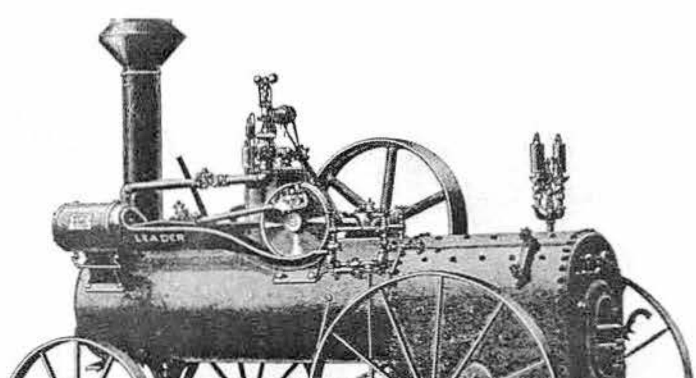
The 6 to 30 H.P. Huber steam portable engine was pictured in a 1902 Huber Mfg. Co. catalog. This engine weighs about 3,500 lbs. The portable and skid engines were especially designed for the use of farmers and sawmill men and range from 6 to 30 horsepower. Huber was located in Marion, Ohio.



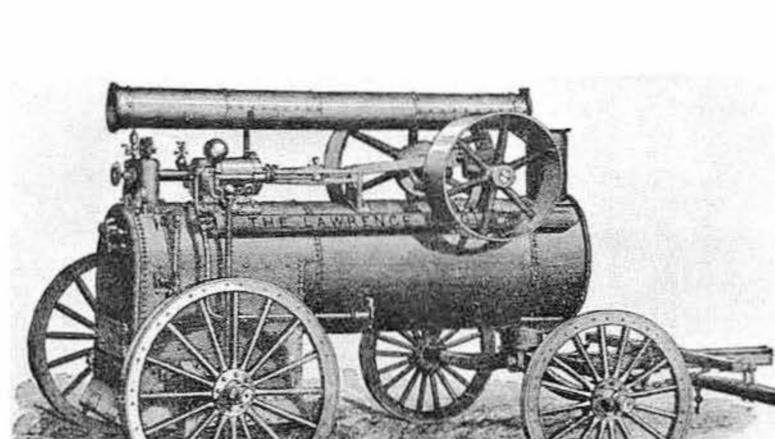
The Ithaca steam portable engine, built by Williams Bros. Co. of Ithaca, N. Y., was an upright boiler type. Each engine was fully warranted. Parts were made in duplicate, so avoiding delays and much expense for repairs.



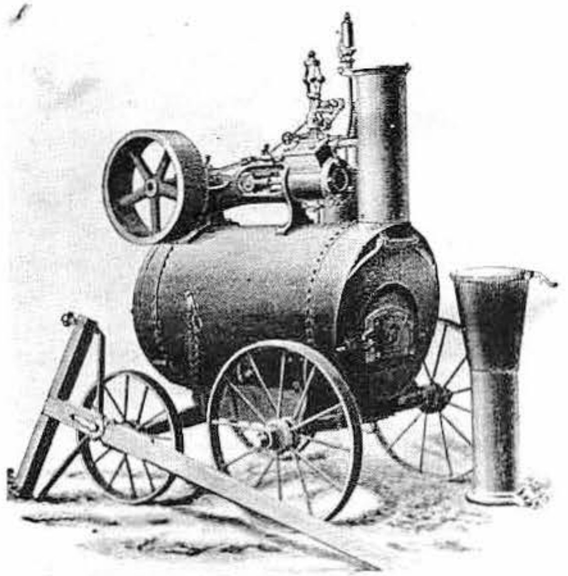
The 30 H.P. Lansing steam portable engine was pictured in an 1888 Lansing Iron Works catalog. It was built in Lansing, Michigan.



The Leader steam portable engine was built in 1885 by the Marion Mfg. Co. of Marion, Ohio. This engine was built in the sizes of 8, 10, and 12 H.P. The boilers were of the locomotive pattern, by which the most heating surface and the most water and steam were secured within certain limits. The longitudinal seams were double riveted, and all flat surfaces were thoroughly stayed and braced. Numerous hand holes made cleaning easy.

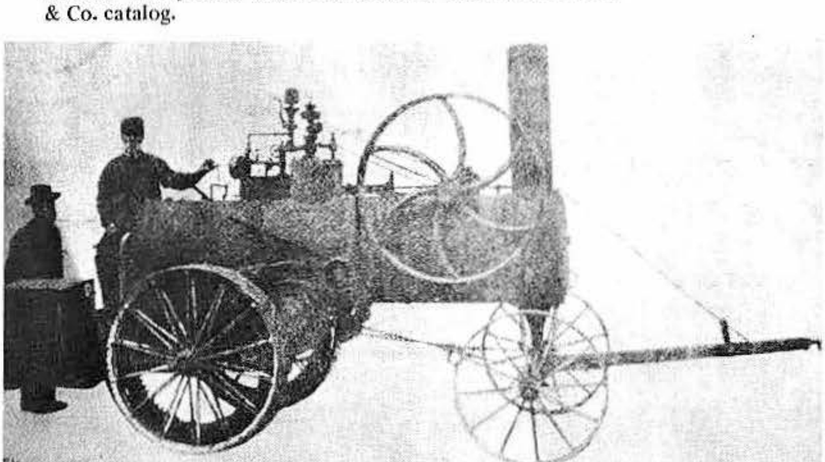


The Lawrence steam portable engine was built by Armington & Sims Co. of Lawrence, Mass. This egnine used the automatic cut-off, folding smoke stack, and locomotive type boiler.



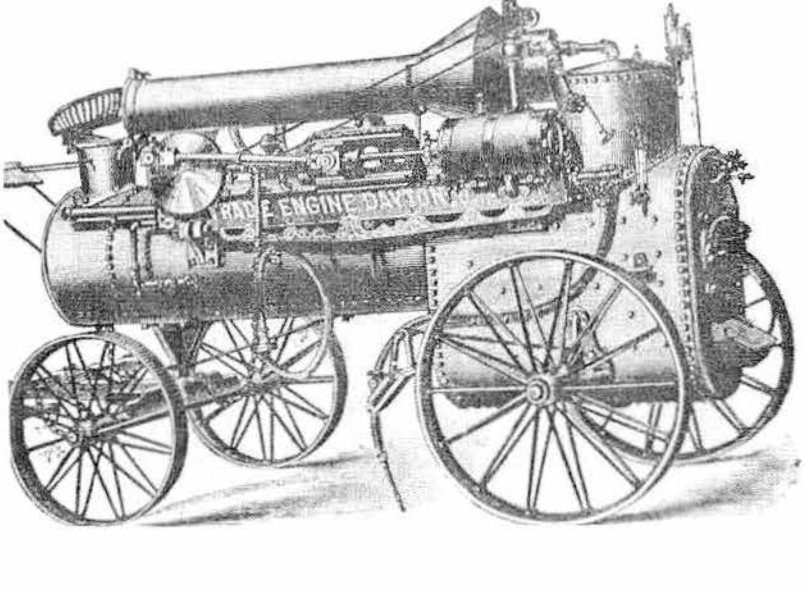
A 5 H.P. James Leffel Co. steam portable engine was built in 1890 by the James Leffel & Co., Springfield, Ohio. This engine was mounted on substantial iron wheels instead of wood. The boiler had an open space through the bottom beneath the grates, for the free discharge of ashes and cinders. This picture was taken from an 1890 James Leffel & Co. catalog.

A 10 H.P. James Leffel Co. steam portable engine was built in 1890 by the James Leffel & Co., Springfield, Ohio. This engine was mounted on very strong and substantially built wooden wheels, with brake. It was complete in every respect for the attaching of horses. The smoke-stack was hinged at top of first joint, so that it could be laid down on top of the boiler during transportation. This picture was taken from a James Leffel & Co. 1890 catalog.

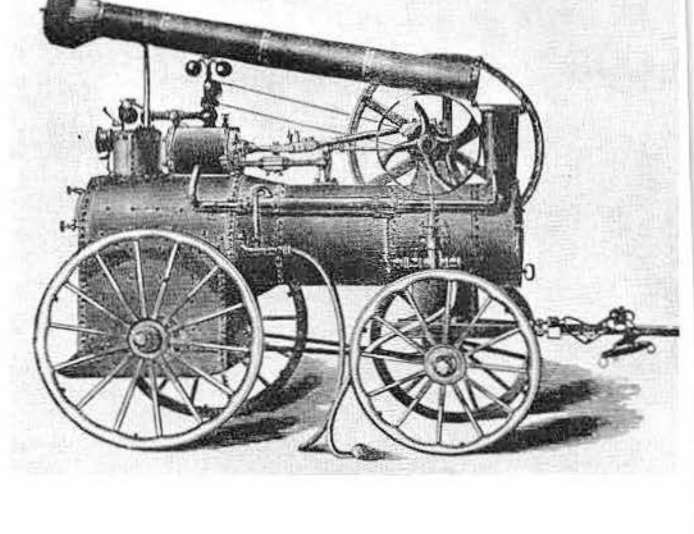


A 6 H.P. Lehmer Steam Traction Engine or horse steered was made in 1875. In 1875, Isaac Lehmer bought a 6 H.P. portable plain engine from Wood, Taber & Morse and had a complete set of patterns made from his own designs for the attachments necessary to make it a steam traction engine. These attachments were made and finished under the direction of Henry Baumgartel, an expert machinist and an employee of Drake's shop in Sturgis, Ohio, at which place the work was done under the personal supervision of Isaac Lehmer. Isaac Lehmer used this engine for over 20 years.

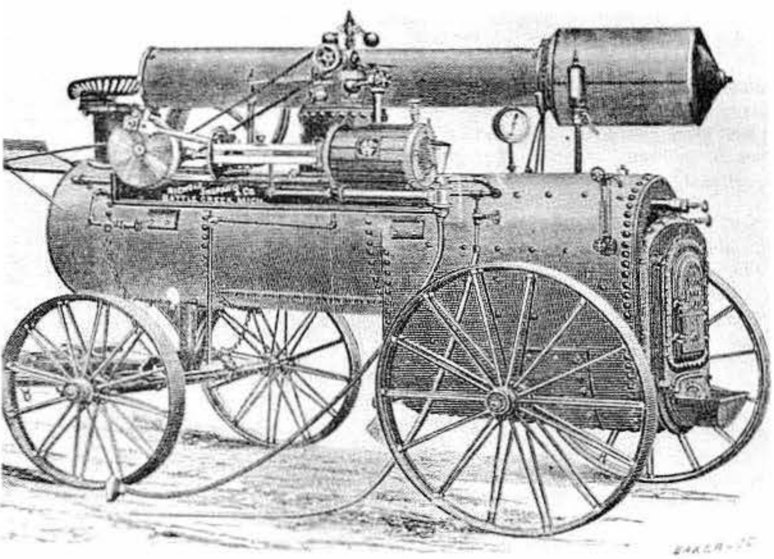
The Marshall steam portable engine was built by Marshall, Graves & Co., Dayton, Ohio. This company manufactured horizontals on wheels from 8 to 15 H.P., and on skids from 8 to 25 H.P. The company also built vertical trade engines of from 2 to 12 H.P.



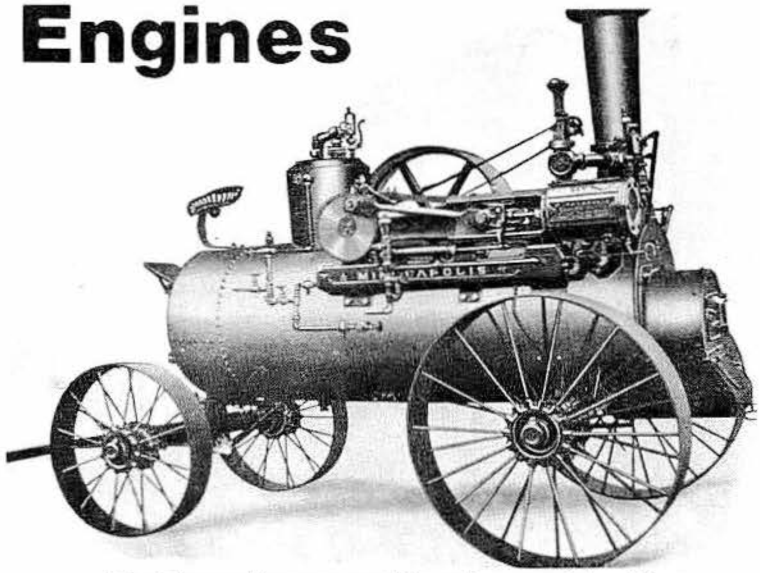
The 4 to 50 H.P. Lovegrove steam portable engines were built by Lovegrove & Co. of Philadelphia, Pa. The boilers were of the locomotive pattern, the tubes lap welded, and the shell of the best charcoal iron. Engines were supplied with pump, feed water heater, steam gauge, water gauge, safety valve, gauge cocks, steam whistle and suction hose. The fire box was constructed on the best principles, the draft was excellent, and the heat so advantageously distributed that working pressure was developed within a very few minutes after the first was lighted. Enclosed in the smoke stack was a spark arrester.



Portable Steam Engines

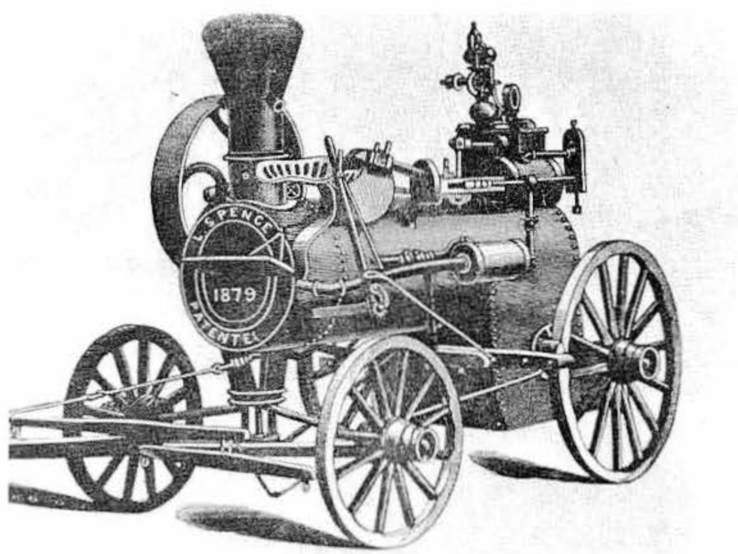


The Nichols & Shepard steam portable engine was built by the Nichols & Shepard Co. of Battle Creek, Mich. This engine is mounted on a locomotive type boiler. It has a cast iron seat and folding smoke stack. The engine is a single simple cylinder.

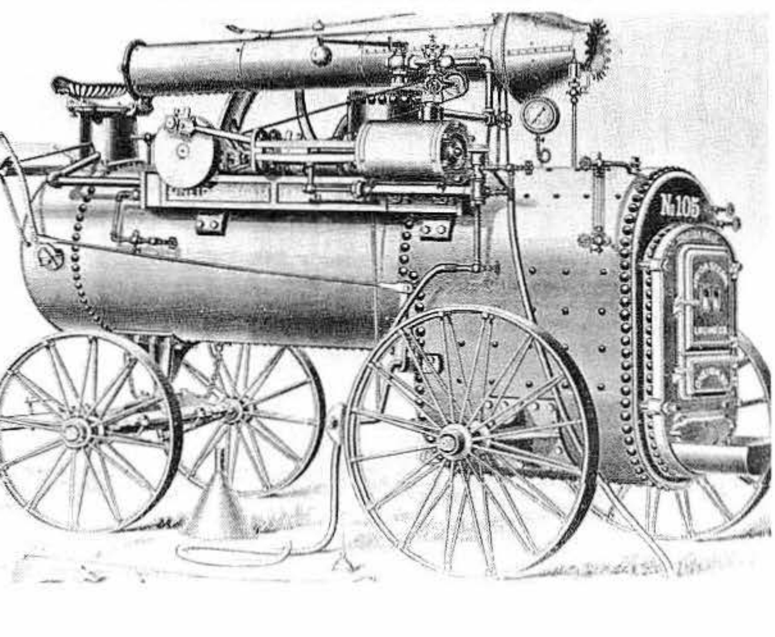


The Minneapolis steam portable engine was pictured in a 1908 Minneapolis Threshing Machine Co. catalog. This engine is mounted on a return flue boiler. These engines were designed for high speed, embracing strength and durability. All castings were made of the best quality of cast iron, free from imperfections. The cylinder, guides and main bearing on all stationary engines were cast to and formed a part of the bed or frame, rendering it impossible for the very essential parts to get out of line. The company was located in Hopkins, Minn.

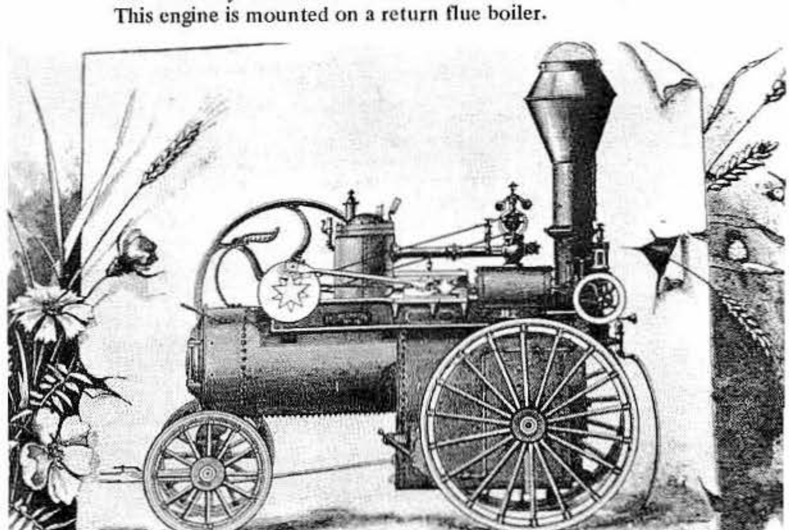
Called the "L. Spence" steam portable engine, this machine was built by Ohio Valley Agricultural Works, Martin's Ferry, Belmont Co., Ohio. These engines were built in 6, 8, and 10 H.P. varieties. The boiler was made of the best quality of charcoal iron, somewhat similar in shape and pattern to a locomotive boiler, which secures the greatest amount of heating surface within given limits. The fire box had a water front (the water flowing all around through the front, except the fire-door) which added materially to the heating surface. It also had an open bottom and an ash pan underneath. In the crown sheet a fusible plug was inserted.



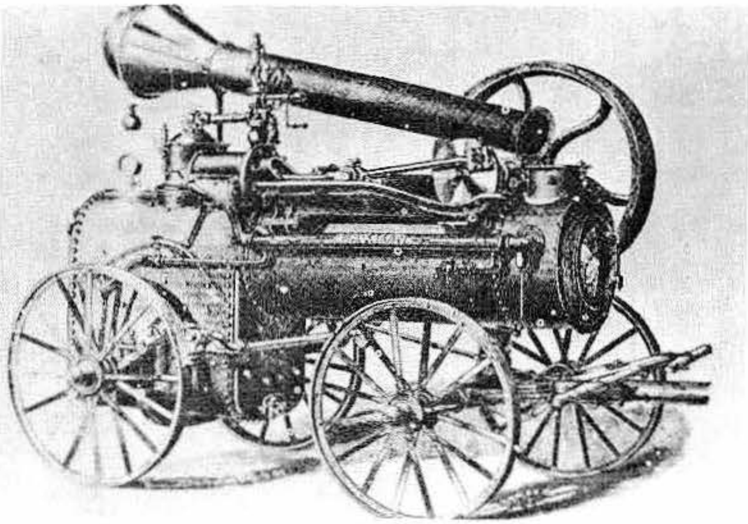
The Oneida steam portable engine was built by the Oneida Steam Engine Co. of Oneida, N. Y. This engine used the locomotive type boiler. It had a cast iron seat, folding smoke stack, hand brake and single cylinder simple engine.



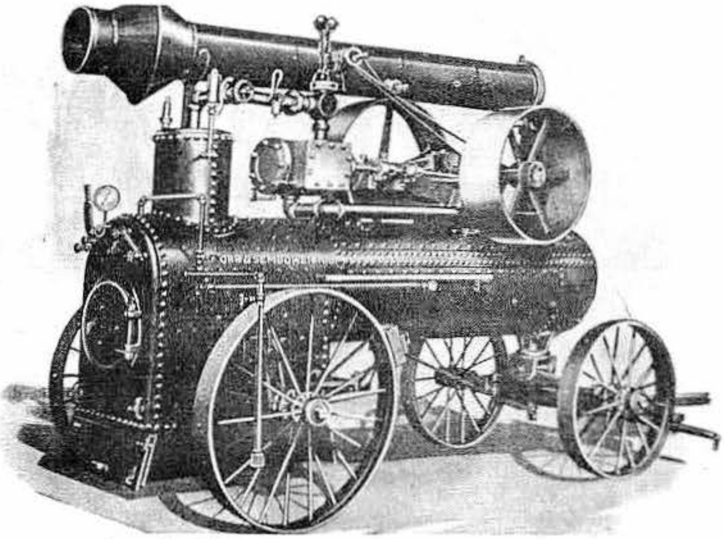
The Northwestern steam portable engine, 1887 vintage, was built by Northwest Thresher Co. of Stillwater, Minn. This engine is mounted on a return flue boiler.



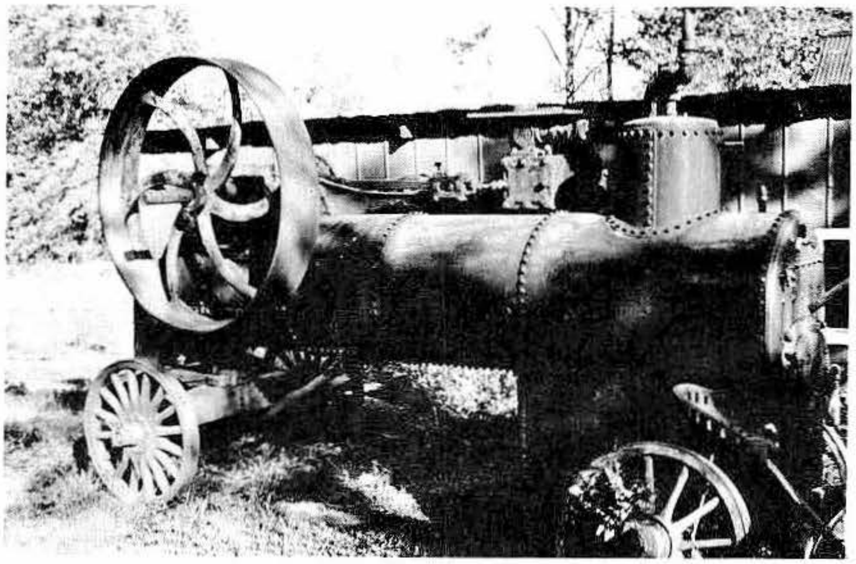
Portable Steam Engines



The Paxton steam portable engine was pictured in an 1886 Harrisburg Car Mfg. Co. catalog. This engine is mounted on a locomotive type boiler and is a simple single cylinder. This portable has the folding smoke stack.

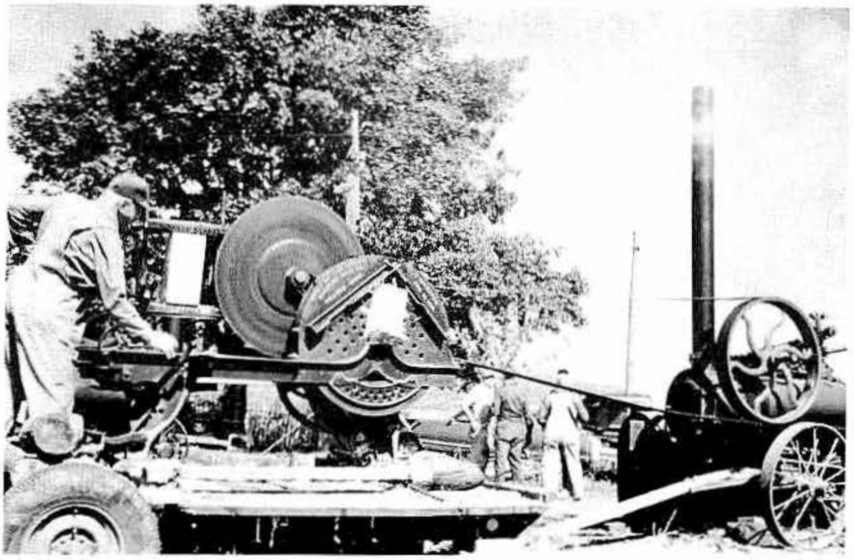


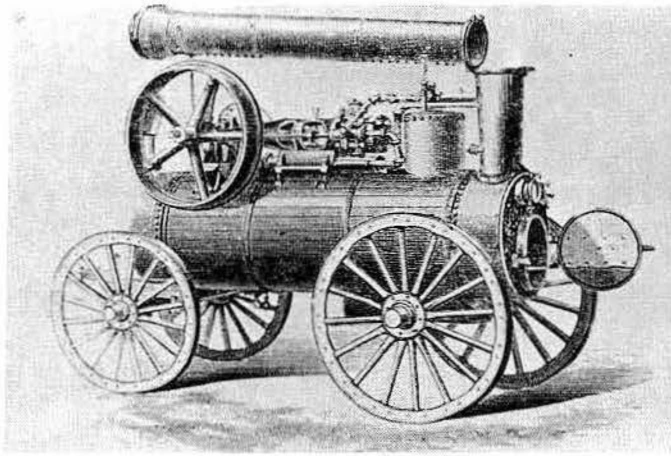
The Orr & Sembower portable steam engine was built by the Orr & Sembower Co. of Reading, Pa. This engine was available in sizes of 15,20,25, 30 and 40 H.P. The shipping weight of the 15 H.P. engine was 8,400 pounds. The engine's rear axle was a one piece affair, bent to shape, and extending across and underneath the fire box. It was equipped with springs to relieve jars when moving over the rough roads of the day — one of the few portables so equipped. The springs were arranged so that they could be relieved when the engine was in operation.



An 18 H.P. Paxton steam portable engine was built in 1874 by Harrisburg Car Mfg. Co. of Harrisburg, Pa. It is owned by Samuel Osborn of New Oxford, Pa. Samuel Osborn is working on a new museum which will be near his residence in New Oxford, Pa.

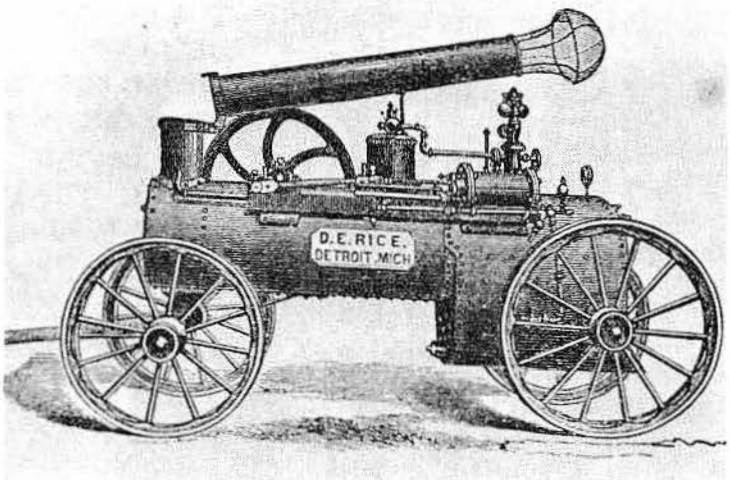
An 8 H.P. Peerless steam portable engine, built in 1913 by the Geiser Mfg. Co. of Waynesboro, Pa. It is owned by Harvey McIntire of Hollidaysburg, Pa. This engine is shown at the Morrison Cove Pioneer Reunion's show, Martinsburg, Pa. Harvey McIntire's 8 H.P. Peerless is running the clubs shingle mill.



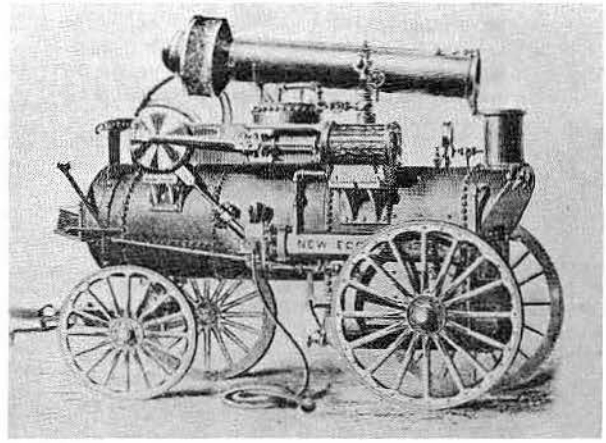


The 10 H.P. Payne steam portable engine was built by the B. W. Payne & Son Co. of Corning, N. Y. This engine sold new for $750. The 8 H.P. sold for $650. This engine's boiler had no flat surfaces requiring staves, which were not only expensive, but uncertain, for many causes. It had the form of a cylinder for a shell and fire box—the oldest, strongest and safest form of boiler known. The engine was supplied with a patent automatic cut-off, which was attached directly to a balanced piston valve, and worked without friction.

Portable Steam Engines

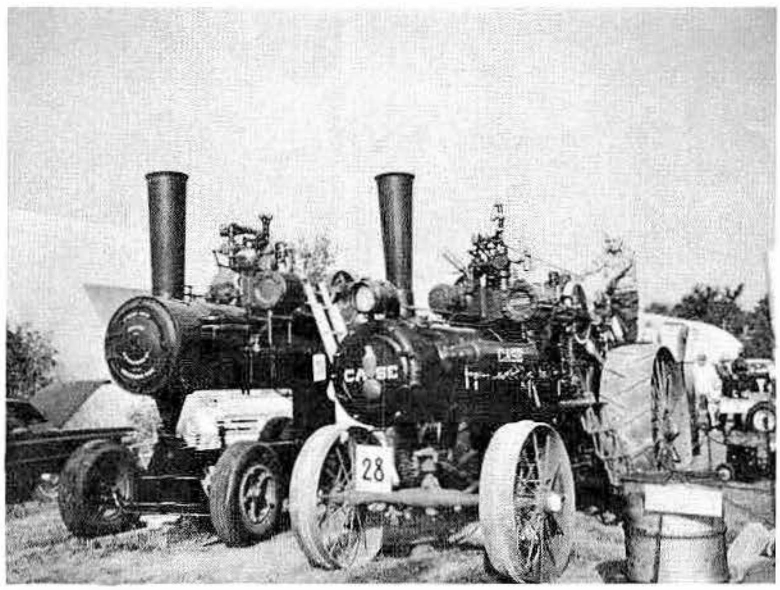


The Rice steam portable engine was built by the D. E. Rice Co., 191 and 193 Atwater Street, Detroit. This engine was mounted on a locomotive type boiler with folding smoke stack. It was mounted on wheels.



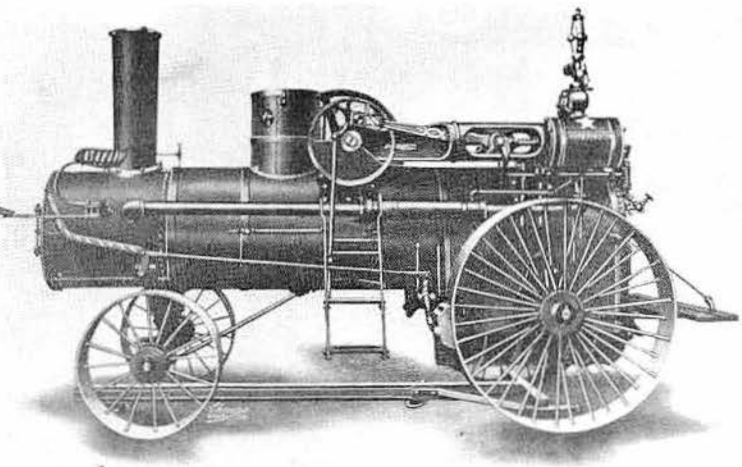
The 10 H.P. Porter steam portable engine was pictured in an 1885 Porter Mfg. Co. catalog. Built in Syracuse, N. Y., this portable had a traction attachment. The engine was mounted on a locomotive type boiler and had a folding smoke stack, one cast iron seat, and a hand brake.

The 30 H.P. Robert Bell portable steam engine was built by the Robert-Bell Engine & Thresher Co. of Seaforth, Ontario, Canada. It is owned by Vic Hall of Ontario, Canada, and is shown at the Ontario Steam & Antique Preservers Assn. show, Milton, Ontario. At the left is Hall's 30 H.P. Robert Bell portable and at the right is Bernard Porter on his 50 H.P. J. I. Case steam traction engine. Bernard Porter is from Woodstock, Ontario.

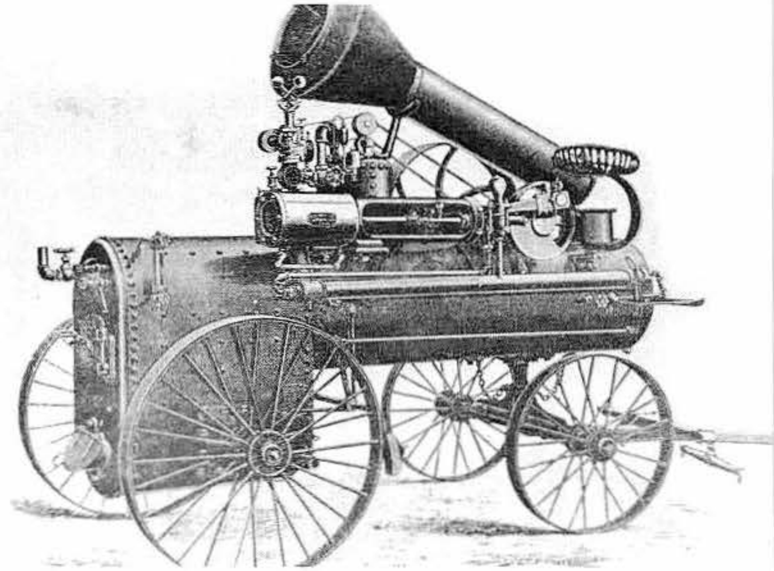


A 10 to 18 H.P. Robinson portable steam engine, built in 1894 by the Robinson & Co. of Richmond, Ind. This is a high mounted plain engine on a boiler with a water lined smoke box. This engine was built in 10, 12, 14, and 16 horsepower.

A 25 H.P. Robinson portable steam engine, built in 1894 by the Robinson & Co., Richmond, Ind. This was the most powerful portable built by Robinson in 1894. It had an exceedingly heavy bed-plate, main shaft, and pillow-blocks.

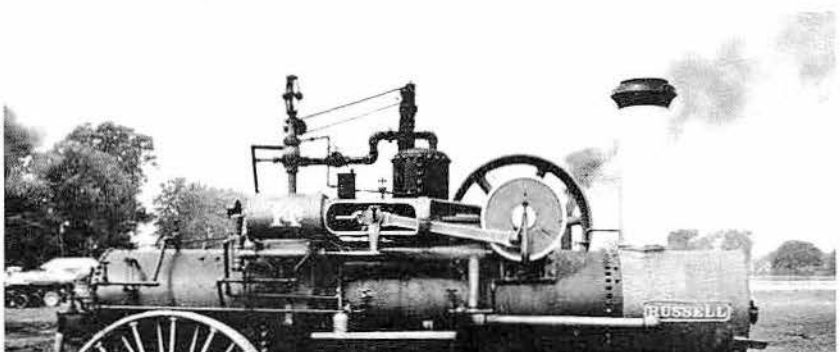


The 22-25 H.P. Robinson portable steam engine was built in 1906. This picture is from a 1906 Robinson & Co. catalog. It is a high mounted Corliss portable with extension smoke box and jacket. It would burn wood, coal and straw.



The M. Rumley steam portable engine was pictured in an 1896 M. Rumley Co. catalog. These engines were built in 8, 10, 12, 15 and 20 horsepowers. This engine was furnished complete with patent governor, quality steam gauge, pop safety valve, Lunkenheimer's patent regrinding globe and angle valves, solid oil cups for connecting rod and eccentric, large cylinder oil cup, water gauge, steam whistle, gauge cocks, four hand pole plates placed at convenient points for easy cleaning, blow-off pipe, steam blower, suction hose, flue cleaner, and wrenches.

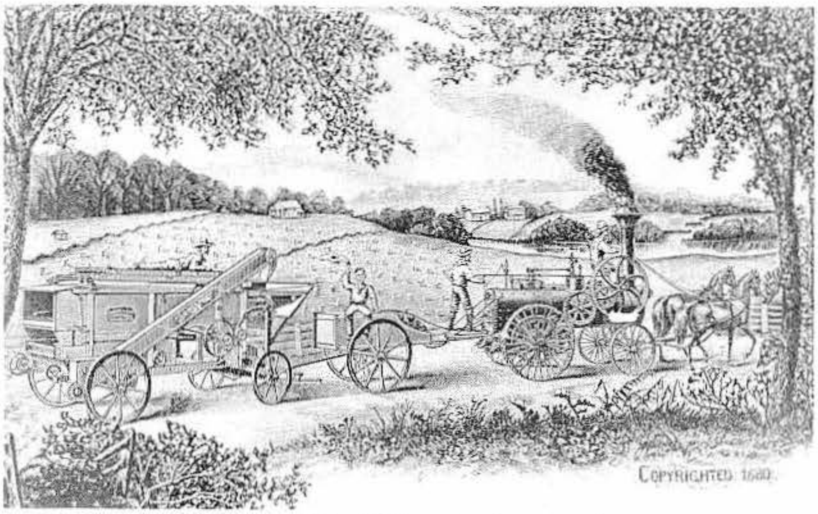
A 6 H.P. Russell portable steam engine was built by the Russell & Co., Massillon, Ohio. This engine is owned by Francis Young of East Sparta, Ohio, and is shown at the Stumptown Steam Threshers Assn. show, New Athens, Ohio. Francis Young's 6 H.P. Russell portable is running the club's shingle mill. The shingle mill is owned by John Sells who lives in Lisbon, Ohio.



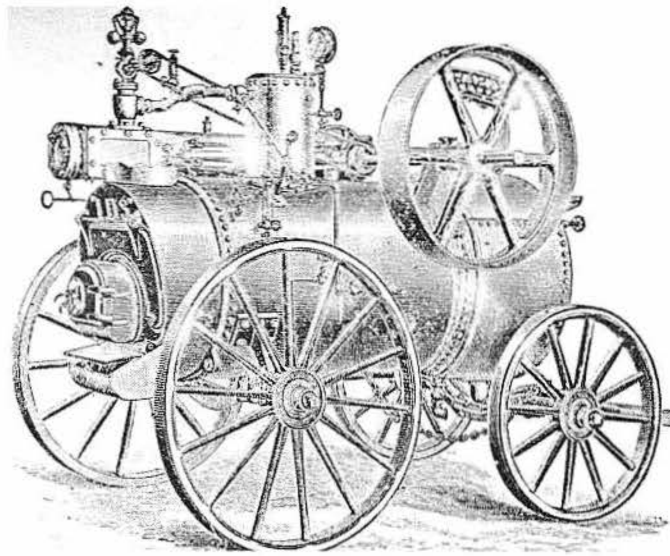
A 20 H.P. Russell portable steam engine built in 1921 by the Russell & Co., Massillon, Ohio. This engine is owned by Elmer K. Wenger of Dalton, Ohio, and is shown at the Tuscarawas Valley Pioneer Power Assn., Dover, Ohio.

A 20 H.P. Russell portable steam engine, built ir 1921 by the Russell & Co. of Massillon, Ohio. Here, Elmer K. Wenger is putting a shovelful of coal into his portable. No one knows when the steam engine was first used for farm power, but it was around 1850. Up to that time, sweeps, treadmills and to some extent, windmills, had been about the only improvement over hand power to operate stationary machines such as threshers, feed mills, wood saws and others.

Portable Steam Engines

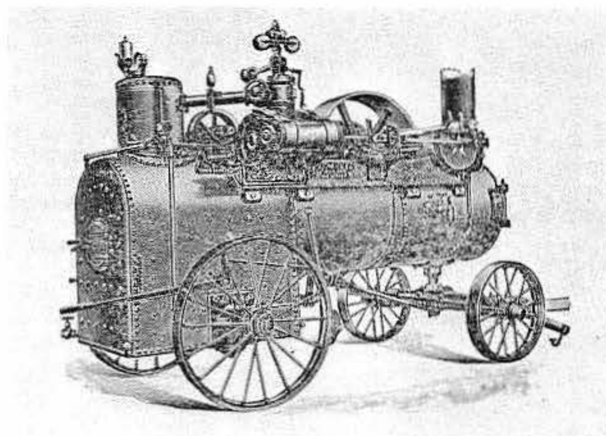


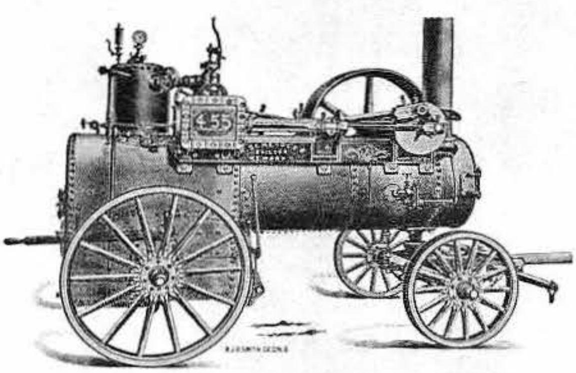
A typical threshing scene of the 1880's, taken from an early Russell & Co. catalog, shows a traction engine which is horse-steered and, more often than not, horse controlled. This is the transition from a portable steam engine to the true traction engine of a few years later, although even in 1885 there was much progress being made. The separator is the Massillon "Cyclone", also made by Russell & Co. of Massillon, Ohio.



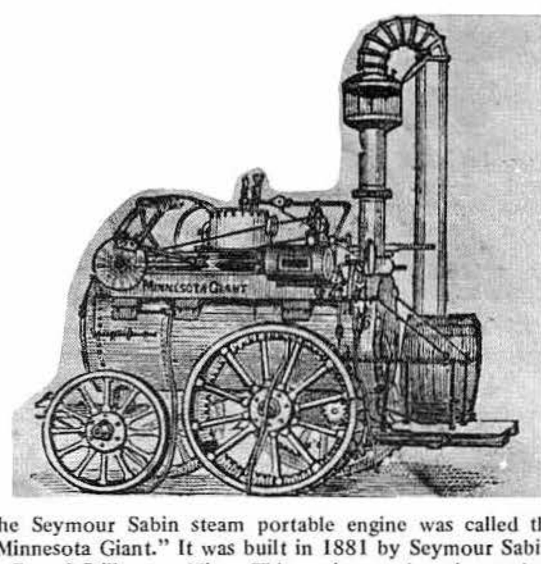
A Sawyer & Massey steam portable engine, built by Sawyer & Massey Co. of Hamilton, Ontario, Canada. The "L.D.S." portable steam engine was a plain one, with reduced shell. Part of the smoke stack is broken away to show governor and connections in this picture.

The 8 to 40 H.P. Scheidler steam portable engines were built in 1903 by Scheidler Machine Works, Newark, Ohio. This portable saw mill engine had an improved balanced valve. It was mounted on iron wheels with hard steel spokes and wrought iron tires shrunk over cast iron rims.



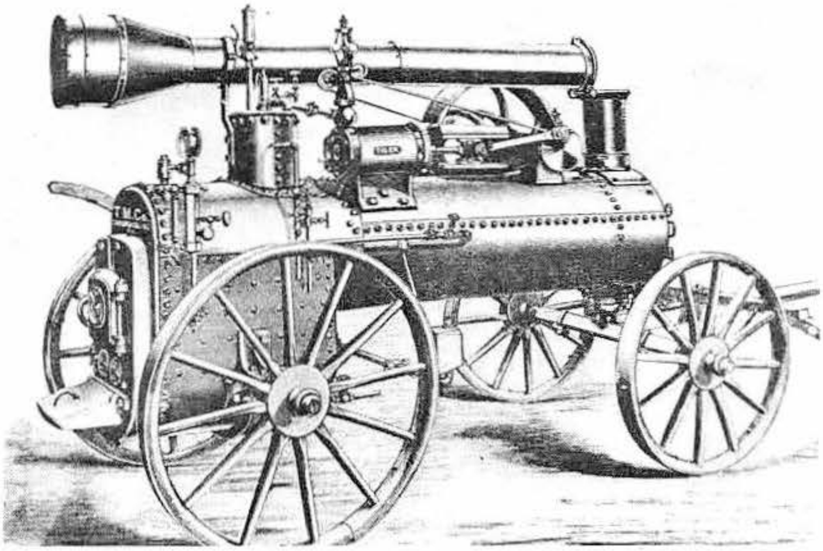


The 8 to 40 H.P. Scheidler steam portable engine was pictured in a 1903 Scheidler Machine Works catalog. This portable saw mill engine with slide valve was mounted on wooden wheels made of the best seasoned white oak. The hub was made in two pieces and bolted together, holding the spokes securely.

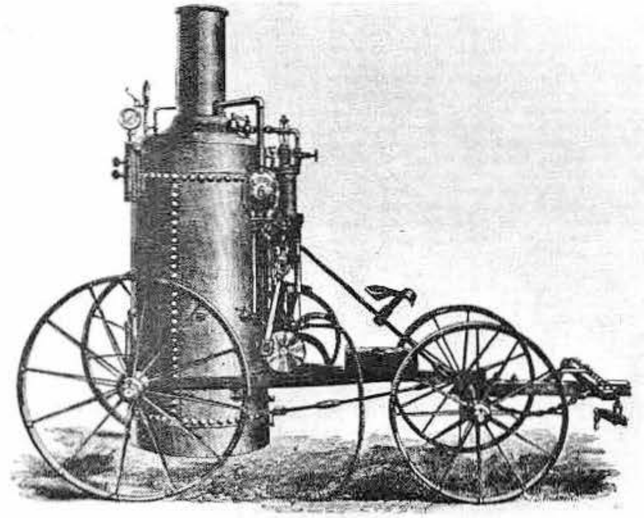


The Seymour Sabin steam portable engine was called the "Minnesota Giant." It was built in 1881 by Seymour Sabin & Co. of Stillwater, Minn. This engine used coal, wood or straw for fuel. The boiler was a return flue type. The cylinder was a 7½ x 12-inch simple single.

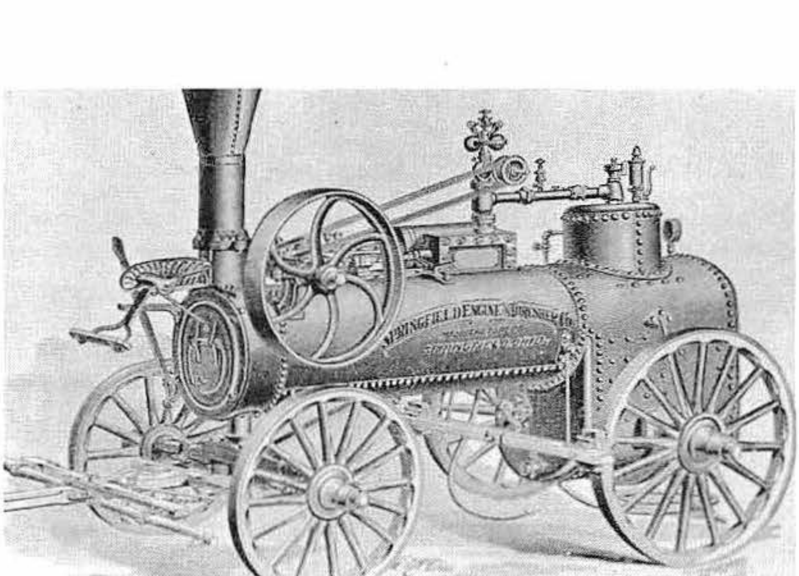
Portable Steam Engines



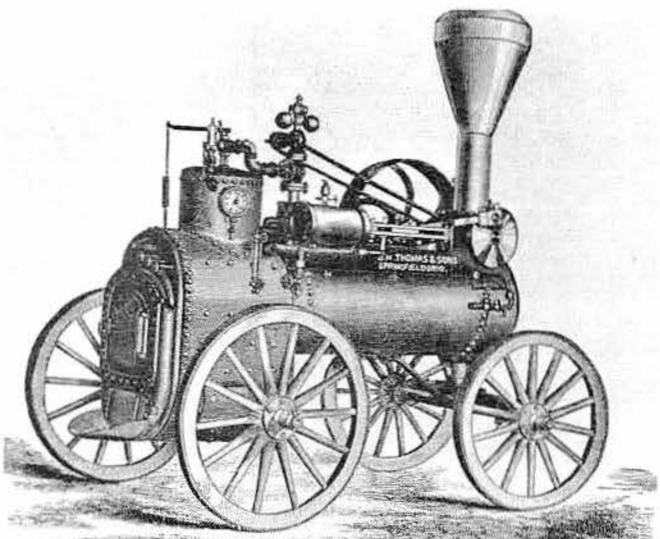
The Taylor steam portable engine was built in 1884 by the Taylor Mfg. Co. of Westminster, Md. These engines were built in 2, 4, 3, 5, 6, and 10 horsepowers. The engines were furnished with a steam gauge, one brass pop safety valve, and a glass water gauge by means of which the height of the water in the bottle could always be seen, which was much more satisfactory than having to depend on the gauge cocks. Gauge cocks were also furnished with the glass gauge. In case the glass broke, the gauge cocks could be used to try the water. Also included were blow-off valve, steam whistle, blower to assist in firing up, self oiling oil cups that could be set to oil fast or slow, oiler for cylinder, cylinder and pet cocks, governor belt, fire irons, steam flue cleaner, by means of which the flues could be cleaned while a fire was in the boiler, and improved balance valve governor with Sawyer's valve attachment and stop motion and speeder.



The Taylor steam portable engine "Clipper" was pictured in an 1884 Taylor Mfg. Co. catalog. These engines were built in 5, 6 and 8 H.P. sizes. The 5 and 6 horsepower engines were furnished with iron, and the 8 H.P. engine with wooden wheels. The ash pan could be removed in hauling, so as to give proper clearance over the roads. The 5 H.P. engine's estimated weight was 3,400 lbs. and sold new for $450. The 6 H.P. engine's estimated weight was 3,500 lbs. and sold new for $485. The 8 H.P. engine's estimated weight was 4,300 lbs. and sold new for $700. A hand pump to fill the boiler with cold water cost an extra $15. Every engine was carefully tested and run with 120 lbs. steam until known to be perfect and complete. All of its parts were warranted.

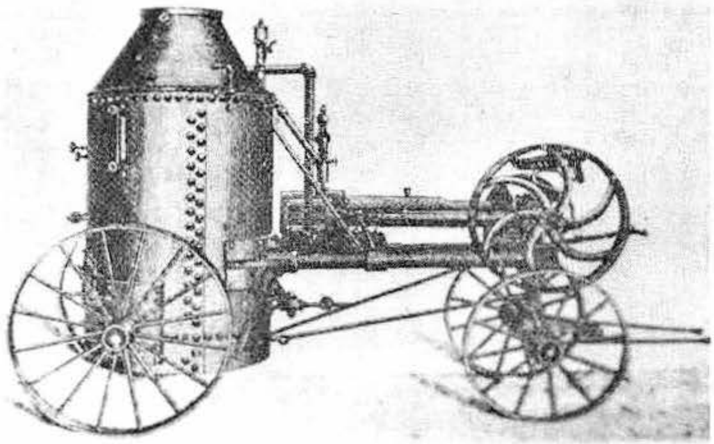


The Springfield steam portable engine was pictured in an 1885 Springfield Engine & Thresher Co. catalog. This engine's fire box had an arched top and was thoroughly stayed, both at the top and bottom, to the outside, by means of stay bolts, which were both screwed into the plates and riveted. Every boiler, after completion, was tested by hydraulic pressure. The fire box was entirely surrounded by water. It used the latest style safety or pop valve which any engineer could regulate without danger or difficulty.

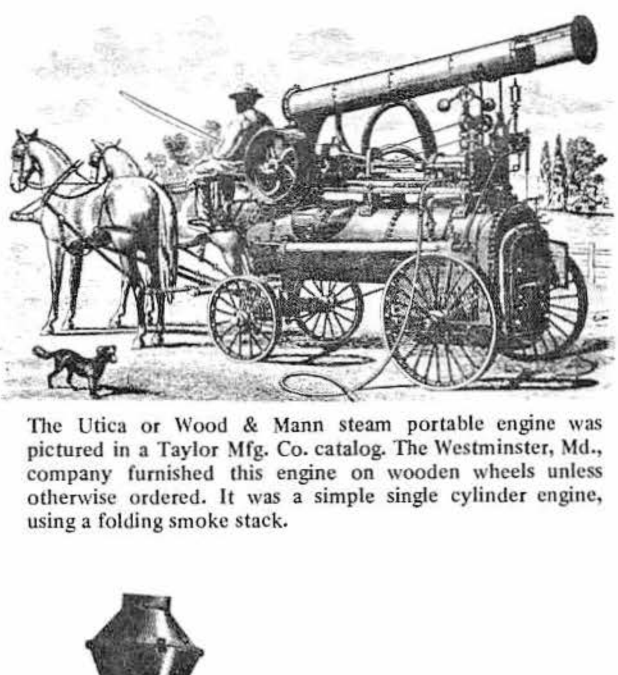


Thomas & Sons steam portable engine was built by the J. H. Thomas & Sons Co. of Springfield, Ohio. This engine had all the improvements used in the stationary engine. These improvements enabled the builder to take the smallest boiler, used by other manufacturers, for an 8 H.P. engine, and by attaching one of their improved engines, produce 12 H.P. In other words, the boiler capacity necessary to run an ordinary 8 horse engine, was sufficient to produce 12 H.P. with this engine, Thomas claimed.

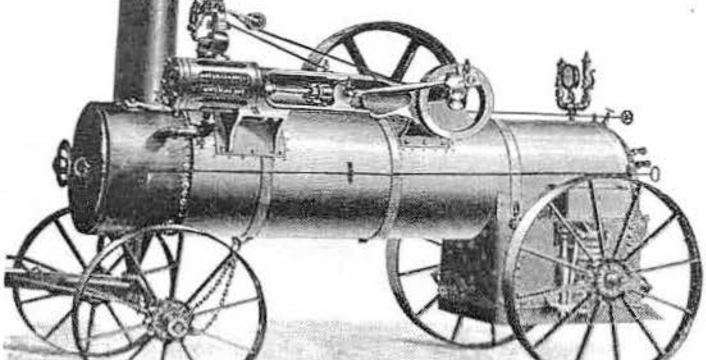
Portable Steam



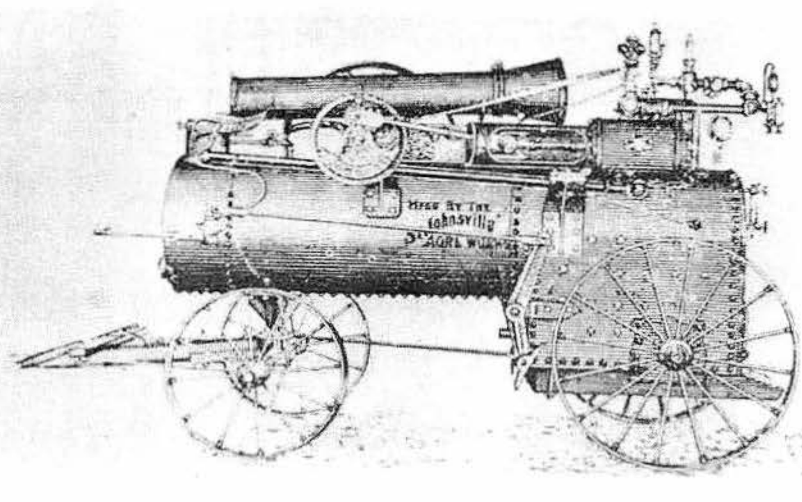
The St. Johnsville steam portable engine was pictured in an 1890 St. Johnsville Agriculture Works catalog. The company was located in St. Johnsville, N. Y. This was one of the few portable engines with an upright boiler.



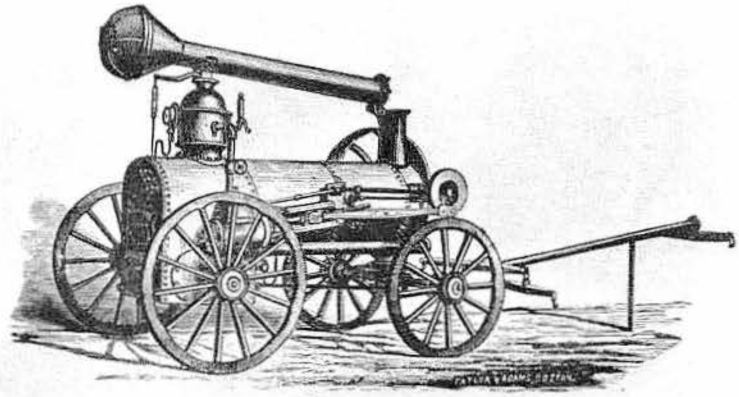
The Utica or Wood & Mann steam portable engine was pictured in a Taylor Mfg. Co. catalog. The Westminster, Md., company furnished this engine on wooden wheels unless otherwise ordered. It was a simple single cylinder engine, using a folding smoke stack.



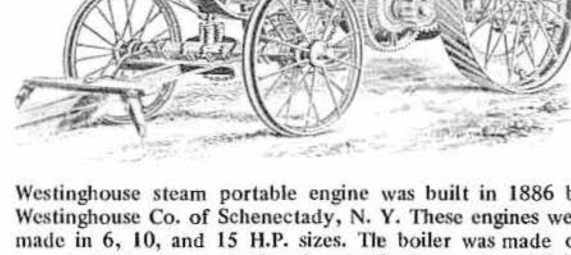
The Waterloo steam portable engine was built by Waterloo Mfg. Co. of Waterloo, Ontario, Canada. This engine was built in 12, 14 and 16 H.P. sizes. This engine used the locomotive type boiler.



Another view of the St. Johnsville steam portable steam engine, taken from an 1890 St. Johnsville Agriculture Works catalog.

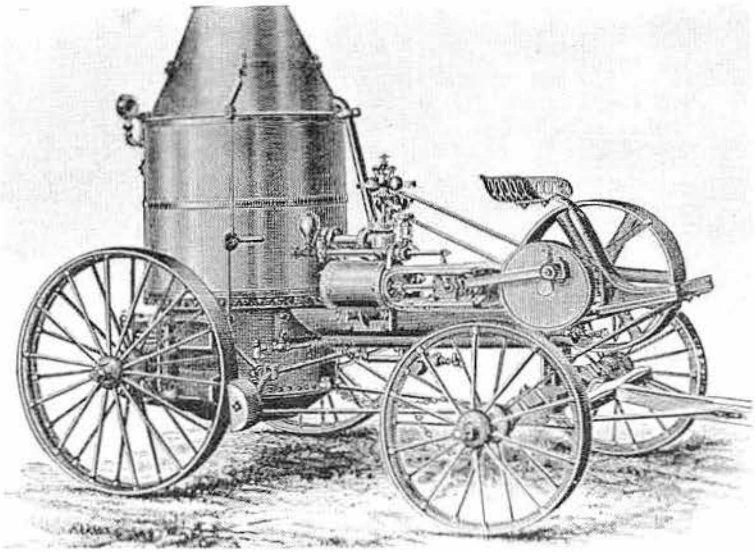


The Treadwell steam portable engine was built by the Treadwell & Co., San Francisco, Cal. This engine was designed for driving threshing machines, but was equally well calculated for other purposes where no more power was required. It was about 10 H.P. The boiler was 7 feet long by 30 inches diameter. The fly wheel was 3 feet in diameter, with an 8-inch face. Gauge cocks, steam gauge, steam whistle, cast iron piston rod, wrought iron shaft, force pump, suction hose, ash pan, smoke-pipe and sparker, and all other fittings were furnished to make the engine complete. The weight of the engine was 5,000 lbs.

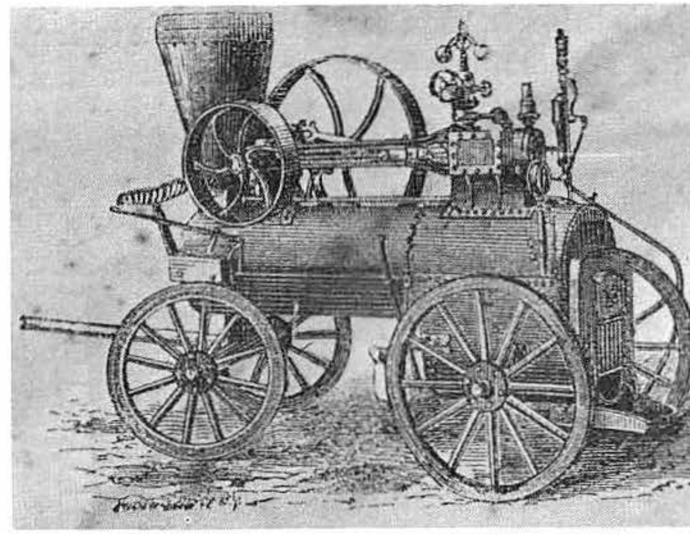


Westinghouse steam portable engine was built in 1886 by Westinghouse Co. of Schenectady, N. Y. These engines were made in 6, 10, and 15 H.P. sizes. The boiler was made of two parts, the lower one forming the fire box and containing the tubes, while the upper one was a shell which surrounded the tubes and composed the water and steam space. The two parts were joined by strongly bolted rings at their intersection, in connection with the vertical smoke tube at the top. It was designed to be taken apart when it was necessary to clean the interior of the boiler or to replace or repair the tubes.

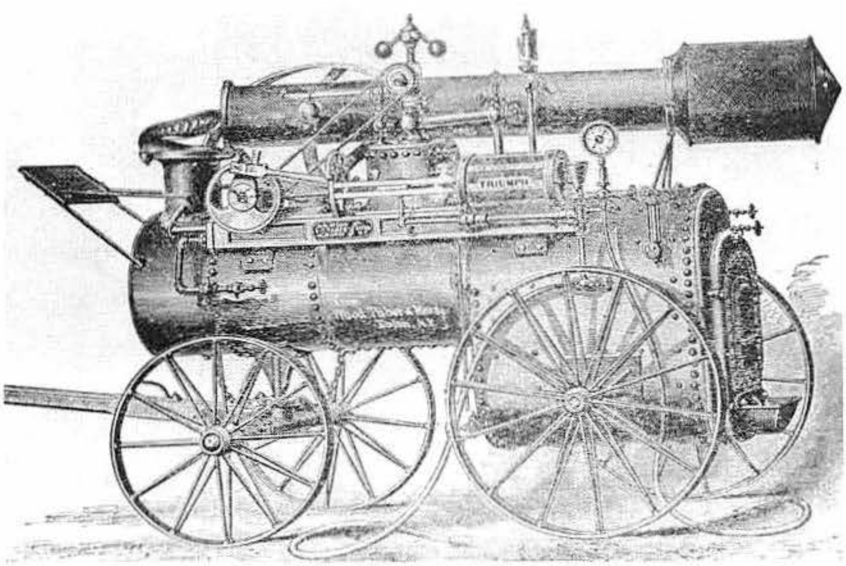
Portable Steam Engines



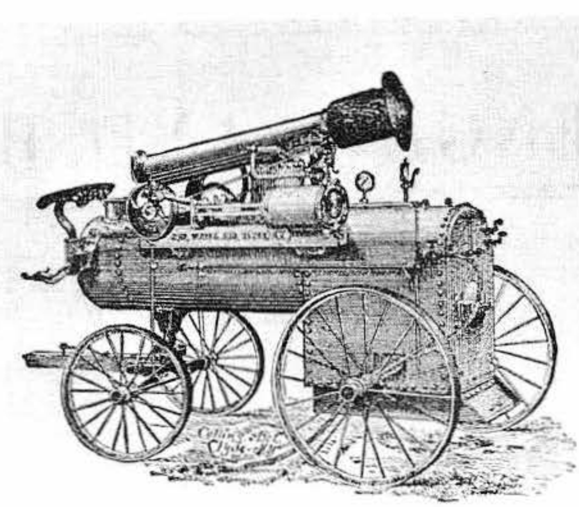
The Westinghouse steam portable engine, built in 1886 by the Westinghouse Co. of Schenectady, N. Y., had a short, quick stroke. For this reason, it was made lighter than the large, long stroke engines. The bed frame contained the heater, and was securely bolted to the fire box portion of the boiler. The cylinder, steam chest, guide and boxes were all in a single casting, and the cylinder and guides were bored from one position in a lathe.



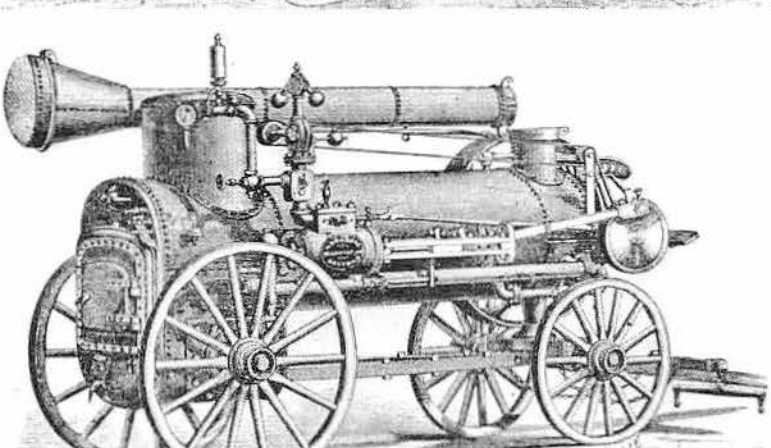
The Wheeler & Melick steam portable engine was built in 1877 by Wheeler & Melick Co., Albany, N. Y. These engines were built in 6, 8, and 10 H.P. sizes. The boiler of this engine was made of the best charcoal iron, and was tested to 200 lbs. PSI. The crank pins, connecting rod, and other moving parts, were made of steel, and the boxes of composition metal.



The 10 H.P. Wood, Taber & Morse "Triumph" steam portable engine was built in 1887 by Wood, Taber & Morse Co. of Eaton, N. Y. This engine's boiler was 25 inches in diameter, with fire box 19 inches wide by 35 inches long. It had 28 flues, 2 inches in diameter, by 4 feet long. The engine cylinder was 6 inches in diameter, by 10 inches stroke. The fly wheel was 40 inches in diameter with 7-inch wide face. It's complete weight was 3,800 lbs.



The Wood & Son steam portable engine was built by S. W. Wood & Son Co. of Clyde, N. Y. This engine was built in 6, 8, 10, 12, 16, 20 and 30 H.P. sizes. Only one boiler feeder was furnished with the portable engines. On the 6 to 20 H.P. the company furnished either injector or pump, as ordered, but charged extra if both injector and pump were furnished.



Woodsum steam portable engine was built by Woodsum Machine Co. of Dayton, Ohio. This engine used the locomotive type boiler, had a folding smoke stack and cast iron seat.

ADDENDUM

Since the first edition of Encyclopedia Of American Steam Traction Engines was compiled, information on several other portable steam engine companies was discovered. Mechanical requirements prevent adding these companies in this section, but these newly found companies have been included in an addendum section on portable steam engines. This section will be found, beginning on page 307.

Holt
S. W. Wood
Advance
Atlas
Minneapolis
Russell
Westinghouse
Page
Thompson
Peterson

STEAM TRACTION ENGINE ALBUM

Buffalo-Pitts
Remington
Waterloo
Port Huron
Reeves
Blumentritt
Upton
Ames
Waterous
Illinois
Greyhound
Huber
Frick
Sawyer Massey
Avery
Baker
Farquhar
Best
Groton
Gaar-Scott

Manufacturers From A To Z

The Steam Traction Engines, pioneers in mechanization, often weighed more than 45,000 pounds and developed more than 120 horsepower. They operated with a steam pressure of 150 to 200 pounds per square inch.

Both the horizontal-tube boiler (the more popular) and the vertical-tube boiler were used in these early vehicles. The two types were different in form but had many operative points in common.

The horizontal-type boiler was constructed mainly with direct flue, with return flue, or with firebox return flue.

The direct-flue boiler was known as the locomotive firebox, straight-flue boiler. The flues passed horizontally from the firebox at the rear to the smokebox in front.

The products of combustion in the return-flue boiler traveled first through the main flue to the combustion chamber in the front end of the boiler and then back through the many small flues to the smokebox in the rear.

Little space was provided under the grates of all three types to catch ashes and cinders. Grates were always in danger of burning out. This danger was overcome in the firebox return flue boiler, in which water surrounded the heated surfaces. Also, the grate area was larger, and the boiler had a larger heating surface in the firebox return flue boiler.

Boilers of the vertical type had a cylindrical shell with a firebox at the lower end. Fire flues extended vertically from the flue sheet above the fire to the top of the boiler, with horizontal water tubes placed in courses, so that each course was at right angles to the course next below and next above. These tubes and circulation plates maintained constant circulation.

Of the two main approaches in constructing the steam traction engines, one was to make the boiler the central structure and attach all other parts—engine, drive gears, steering gear, main truck—to it. The other was to provide a separate framework on which to mount the boiler and attach all the parts.

To spare the engine from damage from heavy shocks and jars on rough roads, heavy coil springs were placed between the boiler and front and rear axles. Springs in the steering gear helped prevent breakage when the front wheels hit an obstruction.

The early engine usually was mounted on the boiler, called top-mounted, and the boiler was mounted on the truck. Sometimes the engines in the locomotive type were mounted under the boiler.

One common method of mounting the boilers, known as side mounting, was to attach stub axles of the drivers to brackets placed at about the middle of the sides of the firebox.

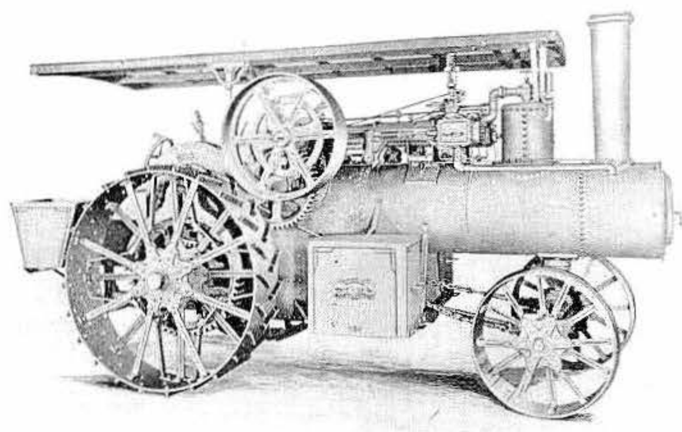
In another type, known as rear mounting, one continuous axle was located behind the firebox. A continuous axle was often mounted ahead of the firebox on return-flue boilers. It was known as under mounting.

The power of the steam traction engine was transmitted usually to the traction wheels by a simple train of spur gears made of cast iron. A driving pinion attached to the friction clutch engaged an intermediate gear, which in turn engaged a large compensating gear on the countershaft. Pinions on either end of the countershaft drove large master gears, which were fastened in the drive wheels by rigid or spring connections.

Traction engines first were geared with one forward speed to make 2 or 3 miles an hour on the road. Later, especially those used in hilly country, were geared with two forward speeds, one slow and one fast.

The front or steering wheels often were of steel, with the outer ends of the spokes riveted to a flange inside the rim, and the inner ends riveted to arms on the hub. A flange, or collar, around the middle of the outside of the front wheels tended to prevent lateral slippage. Steering was done by guiding the front wheels with a chain, winding shaft (roller) worm gear, and hand wheel. Sometimes power from the engine helped in steering.

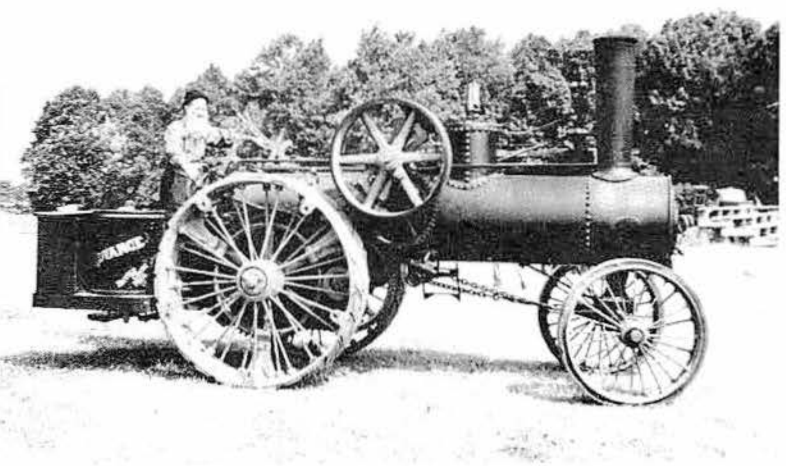
The rear traction, or drive wheels usually had steel tires, round or flat spokes, and a cast-iron hub. Cleats of steel or iron were mounted diagonally on the outside of the rims to increase traction. On rims that were cast, the cleats were part of the cast.



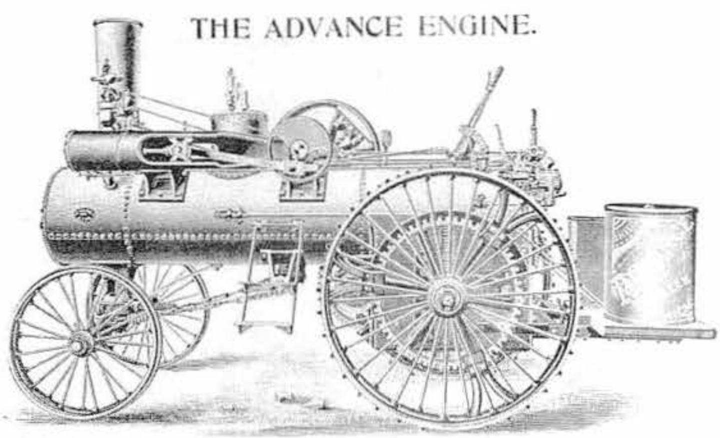
Manufacturers From A To Z

Advance Thresher Co., Battle Creek, Michigan
Advance-Rumely Thresher Co., LaPorte, Indiana
American Engine Co., Jersey City, New Jersey
American-Abell Engine & Thresher Co., Toronto, Ontario, Canada
Ames Iron Works, Oswego, New York
Atlas Engine Works, Indianapolis, Indiana
Aultman Co., Canton, Ohio
Aultman-Taylor Machinery Co., Mansfield, Ohio
Avery Power Machinery Co., Peoria, Illinois
Baker A. D. Co., Swanton, Ohio
Benicia Agricultural Works, Benicia, California
Best Mfg. Co., San Leadro, California
Birdsall Engine Co., Auburn, New York
Blumentritt Co., Spring Valley, Minnesota
Buffalo-Pitts Steam Roller Co., Buffalo, New York
Buffalo-Springfield Roller Co., Springfield, Ohio
Byron, Jackson Machine Works, San Francisco, California
Case J. I. Co., Racine, Wisconsin
Coffin & Standish, Martinez, California
Colean Mfg. Co., Peoria, Illinois
C. & G. Cooper & Co's., Mt. Vernon, Ohio
Crowell Mfg. Co., (Greencastle), Greencastle, Pennsylvania
D. June & Co., (Champion), Fremont, Ohio
Davidson & Rutledge, Ada, Ohio
Eagle Machine Works, Indianapolis, Indiana
Fairbanks Steam Shovel Co., Marion, Ohio
Farquhar A. B. Co. Ltd., York, Pennsylvania
Fishkill Landing Machine Co. (Mills), Fishkill, New York
Frick & Co., Waynesboro, Pennsylvania
Gaar Scott & Co., Richmond, Indiana
George W. Morris, Racine, Wisconsin
George Page & Co., Baltimore, Maryland
George-White & Sons Co., London, Ontario, Canada
Greyhound, Banting Mfg. Co., Toledo, Ohio
Groton, Charles Perrige & Co., Groton, New York
Hagerstown Steam Engine & Machine Co., (Empire), Hagerstown, Maryland
Harrisburg Car Mfg. Co., (Paxton), Harrisburg, Pennsylvania
Harrison Machine Works, (Jumbo), Belleville, Illinois
Heilman Machine Works, Evansville, Indiana
Holt Mfg. Co., Stockton, California
Hooven, Owens & Rentscler Co., Hamilton, Ohio
Huber Manufacturing Co., Marion, Ohio
Illinois Thresher Co., Sycamore, Illinois
Jacob Price, Racine, Wisconsin
James Means & Co., (Burdett), Steubenville, Ohio
John Aylward Co., Livermore, California
John Goodison Thresher Co. Ltd., Sarnis, Ontario, Canada
J. L. Heald Co., Vallejo, California
J. M. Ross, Sons & Co. Ltd., (Cornell), St. Catharines, Ontario, Canada
J. O. Spencer, Son & Co., (Wide-Awake), Waterloo, New York
Keck-Gonnerman Co., Mt. Vernon, Indiana
O. S. Kelly Co., Springfield, Ohio
Kitten, Ferdinand Foundry, Co., Ferdinand, Indiana
Koppes W. M. & Co. (Paxton), Orville, Ohio
Lane & Bodley Co., Cincinnati, Ohio
Lang & Button Co., Itheca, New York
Lansing Iron Works Co., Lansing, Michigan
Leader, Mario Mfg. Co., Marion, Ohio
MacDonald Thresher Co., Stratford, Ontario, Canada
Matteson & Williamson, Stockton, California
McLaughlin, Co., San Francisco, California
McNamar Co., Newark, Ohio
Merritt & Kellogg, Battle Creek, Michigan
Messinger Mfg. Co., Tatamy, Pennsylvania
Minneapolis Threshing Machine Co., Hopkins, Minnesota
Morningstar, Mfg. Co., (Napoleon), Napoleon, Ohio
Muncy Traction Engine Co., Muncy, Pennsylvania
New-Giant, Northwest Thresher Co., Stillwater, Minnesota
New Hamburg Mfg. Co., Ltd., New Hamburg, Ontario, Canada
Nichols & Shepard Co., Battle Creek, Michigan
Ohio Thresher & Engine Co., Upper Sandusky, Ohio
Owens, Lane & Dyer Co., (Hamilton), Hamilton, Ohio
Peerless, Geiser Mfg. Co., Waynesboro, Pennsylvania
Peterson N. C. & Sons, Sarnia, Ontario, Canada
Port Huron Engine & Thresher Co., Port Huron, Michigan
Reeves & Co., Columbus, Indiana
Remington, Co., Woodburn, Oregon
Ritchie & Dyer Co., Hamilton, Ohio
Robert-Bell Engine & Thresher Co., Seaforth, Ontario, Canada
Roberts & Doan Co., Sacramento, California
Robinson & Co., (Conqueror), Richmond, Indiana
Rumely M. Co., LaPorte, Indiana
Russell & Co., Massillon, Ohio
Ryan & McDonald, Waterloo, New York
Sawyer-Massey & Co., Ltd., Hamilton, Ontario, Canada
Scheidler R. Machine Works, Newark, Ohio
Springfield Engine & Thresher Co., Springfield, Ohio
Stevens A. W. & Son Co., Auburn, New York
Stevens A. W. Co., Marinette, Wisconsin
Twentieth Century Mfg. Co., Boynton, Pennsylvania
Union-Iron Works, (Walker), Newark, Ohio
Upton, Mfg. Co., Port Huron, Michigan
Waterloo Mfg. Co., Ltd., Waterloo, Ontario, Canada
Waterous Engine Works, Brantford, Ontario, Canada
Watertown Engine Company, Watertown, New York
Westinghouse Co., Schenectady, New York
Wood Brothers Thresher Co., Des Moines, Iowa
Wood & Son S. W. & Co., Clyde, New York
Wood, Taber & Morse, Co., Eaton, New York

Advance Thresher Co.

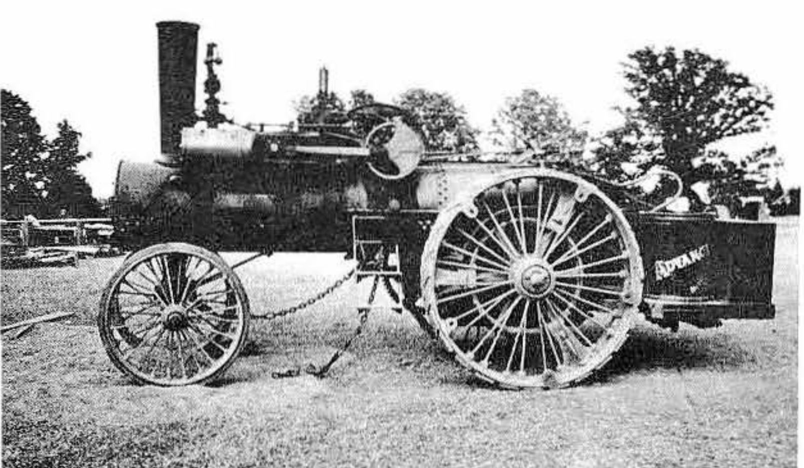


A 12 H.P. Advance steam traction engine built in 1907 by Advance Thresher Co. of Battle Creek, Mich. This engine is owned by Ken Lewis of Jackson, Mich., seen here operating his engine at the Michigan Steam Engine & Threshers show in Mason, Mich. The Advance Thresher Co. was incorporated in March 1, 1881.



A 12 H.P. Advance steam traction engine built in 1898 by the Advance Thresher Co. of Battle Creek, Mich. This is a simple engine, and a wood and coal burner. This company sold more than 12,000 steam traction engines in 23 years.

This is the left side of the 12 H.P. Advance steam traction engine, built in 1907. The steering chain on the left side is broken. Ken Lewis of Jackson, Mich., owns this engine. It is in action at the Michigan Steam Engine & Threshers show in Mason, Mich.



The Advance Thresher Co. was incorporated on March 1, 1881. In 1902, Advance Thresher and the Minneapolis Threshing Machine Co. jointly purchased the John Abell plant in Toronto, Ontario, Canada and renamed it the American Abell Engine and Thresher Co. Limited. Although American owned, the new company immediately adopted the policy of "Canadian-made goods for Canadian users" and continued without interruption to build the threshing machinery formerly manufactured by the John Abell engine and Machine Works Company.

The Advance was an overhanging-cylinder engine, the cylinder being a separate casting bolted to the end of the frame which formed the cylinder-head. This arrangement allowed the cylinder to expand and contract without causing any injurious strain. The frame was of the most approved form and handsome design, with the metal so distributed as to give the greatest rigidity with the least weight.

The aim of the designer was to produce a shapely, compact and balanced engine, one that possessed great strength, and offered ease in performance and facility in operation.

The machinery was well distributed in such a manner as to throw the weight upon the wheels more evenly than was the case of many other steam traction engines.

It was argued by some engine builders that the greatest possible weight should be placed on the drive-wheels. Advance claimed this to be an error. The weight should be so distributed that, with the most favorable footing for the drive-wheels, the engine would have sufficient power to barely slip the wheels. Any additional weight on the drive-wheels would serve no good purpose and would prove an impediment in passing over soft ground. By transferring the excess of weight from the drive to the front wheels, a better steering engine resulted.

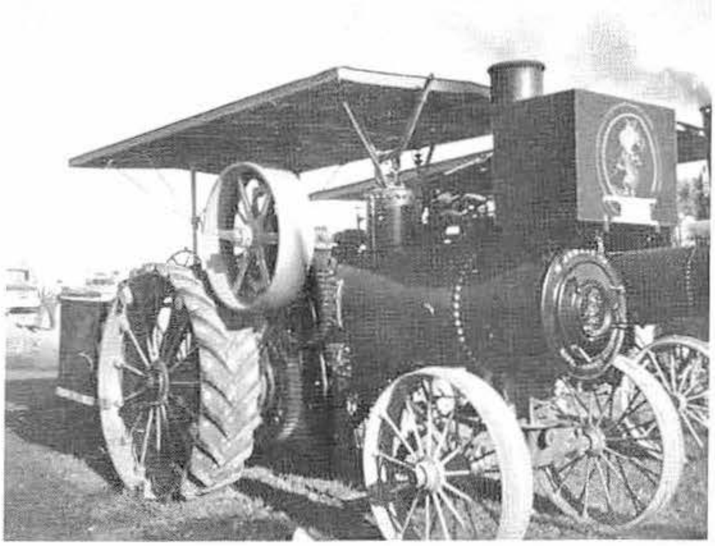
A very important feature in these engines was the distribution of the parts as related to the strain on the boiler. With the crankshaft located near the smoke-stack, the strain between the two shafts converted the shell of the boiler into a lever and tended to tear the shell from the fire box. Advance eliminated this defect. The crank shaft was nearly over the counter-shaft, and there was no such strain on the rivets where the fire box was attached to the shell of the boiler.

Many users of agricultural engines, and particularly those using engines made by the old builders, fell into the error of believing that long stroke engines were more powerful, because the connecting rod worked on a longer crank and must develop more power than when the crank was short, as in a short stroke engine. This would be true if the short stroke engine made only the same number of revolutions as the long stroke.

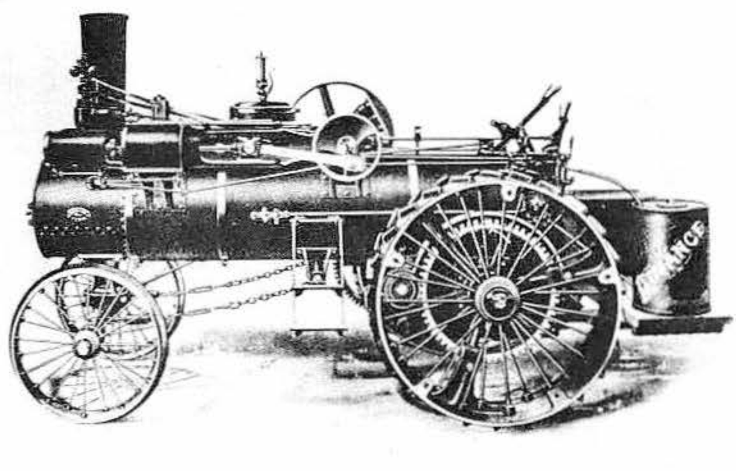
But, if one engine is two-foot stroke and another one-foot, and the two-foot stroke makes 100 revolutions per minute, then the one-foot stroke must make 200 revolutions in order to equal it in power, the bore of the cylinders and steam pressure being the same, the shorter leverage being obtained 200 times, while the longer-leveraged engine obtained it in 100 times. The engines, with their respective revolutions, would each make 400 piston feet per minute. Hence, the number of piston feet per minute is the factor.

The Advance Thresher Co. sold more than 12,000 steam traction engines in 23 years. The company made steam traction engines of simple and compound cylinders, portable steam engines, portable engines on skids, Advance threshing machinery, and horse powers.

Advance Thresher Co.

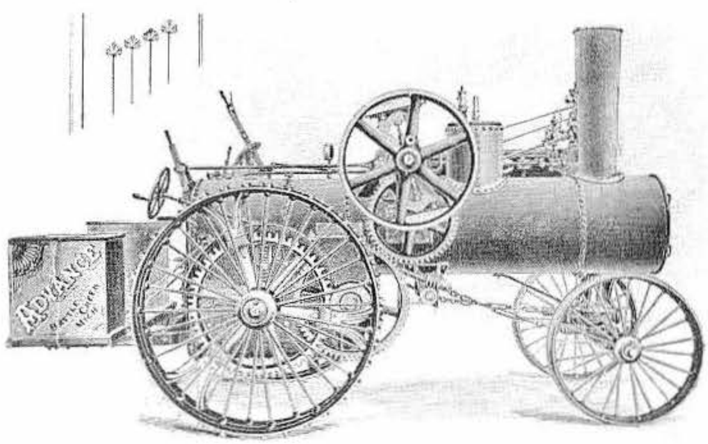


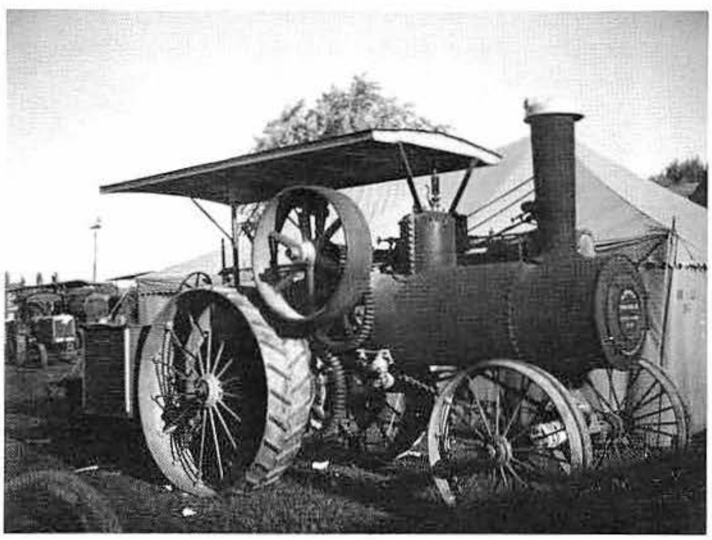
A 16 H.P. Advance simple side mounted coal burner. This engine was built in 1917. It is owned by Fred McCarl of Barry, Ill. This engine is at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa. Interest in the steam traction engine is more than a hobby. It is actually preserving a part of North American history.



A 14 H.P. Advance compound steam traction engine. This one is a coal burner. Advance built steam traction engines in 10, 12, 14, 16, 18, 20, 21, 22, 26, 30, 35 and 40 horse powers.

This is a coal or wood burning 16 H.P. Advance steam traction engine with a simple cylinder. This picture came from a 1898 Advance Co. catalog. The engine used 40 flues and had a top speed of 225 RPM. On all the engines (except 6 to 10 horse) a hollow axle was used. The construction of the axle was such that it was self-oiling.

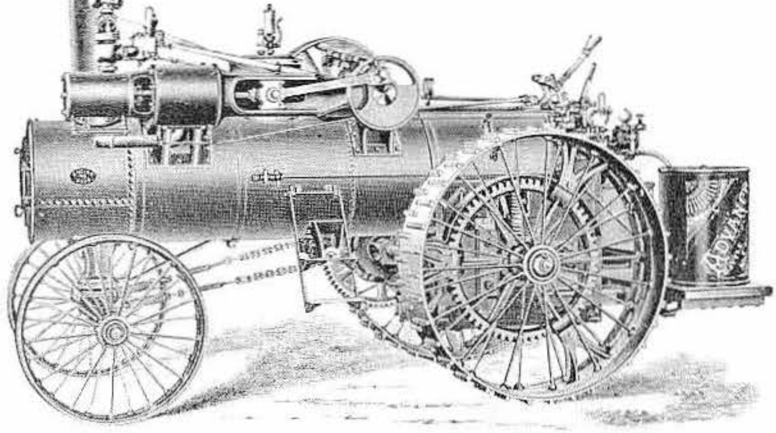




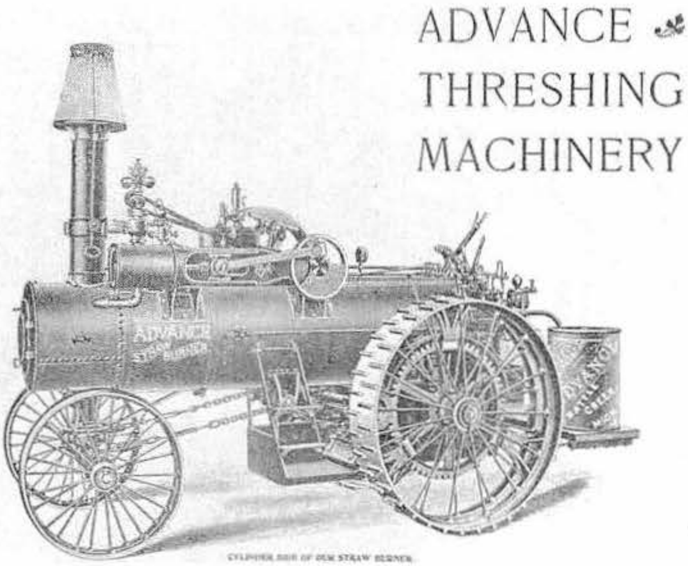
A 16 H.P. Advance simple side mounted coal burner engine. This engine was built in 1904. It is owned by Lee Swartzendruber of Mount Pleasant, Iowa. This engine is at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa. Horsepower rating denotes a unit of work equal to 550 foot pounds per second.

A 20 H.P. Advance compound coal and wood burner engine, built in 1898. With the mild exhaust and reduced draught of the compound engine, fewer sparks were drawn from its furnace and there was a greater tendency to retain sparks in the smokebox.

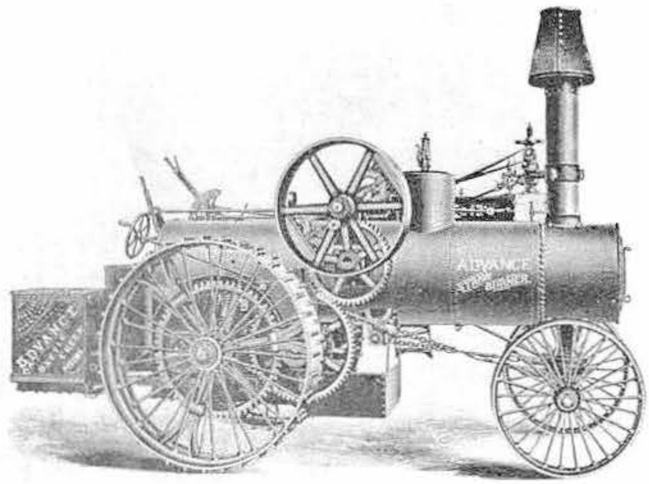
THE ADVANCE ENGINE.



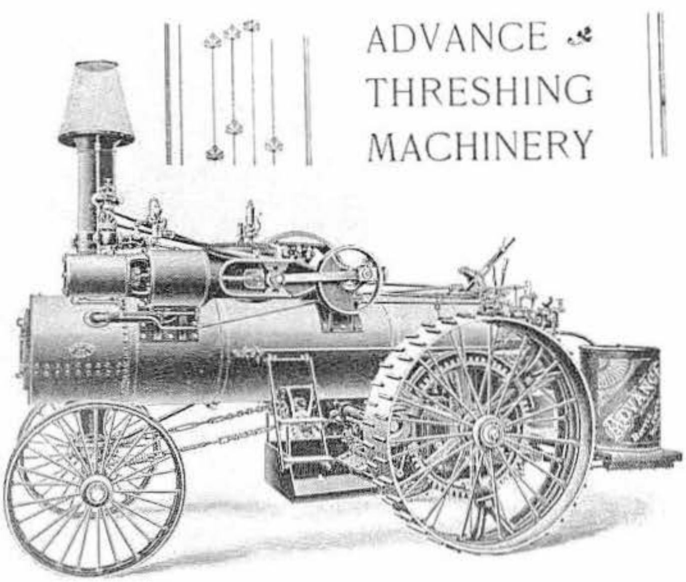
Advance Thresher Co.



The Advance simple cylinder steam traction engine. This engine is a straw burner, pictured in an 1898 Advance catalog. This engine's fire-box, contrary to the rule adopted by others, was made to widen from the grates upward.

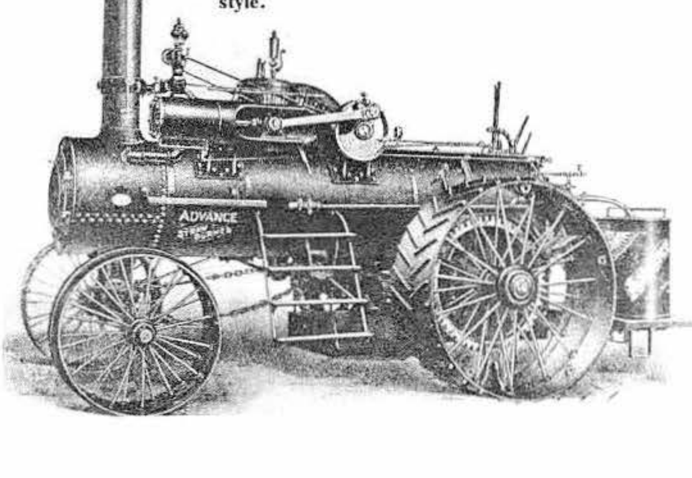


This Advance simple cylinder engine is a straw burner. The picture is from an 1898 Advance Co. catalog. This engine was provided with arrangements for reducing the hazard of fire to a minimum. The smoke-stack had a screen at the top that could be opened easily to increase the draft while firing up. In front and under the draft opening, there was secured a large, heavy, iron pan which received the hot ashes when pushed from under the grates. Immediately above this pan was a heavy steam hose connected to the feed-water pipe, and provided with a valve through which water could be thrown on the ashes.

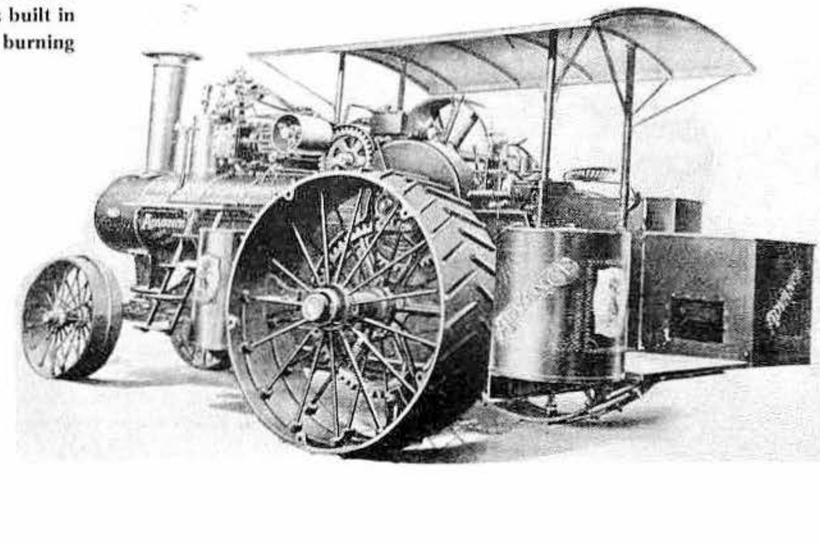


This Advance compound steam traction engine is a straw burner. The picture was taken from a 1898 Advance Co. catalog. This engine used a dead plate in the fire-box. The object of this plate was to prevent the air from making a short cut to the combustion chamber. The plate was always covered with new straw, ready to be pushed into the fire when a new supply entered the feed-spout.

A 30 H.P. Advance simple straw burner steam traction engine built in 1906. A powerful engine with heavy gears for plowing and like work, it could be fitted with extension rims, all steel plow hitch, and a large water tank and fuel box. It was built in all sizes above 14 H.P., in either coal, wood or straw burning style.



A 30 H.P. Advance cross compound straw burner engine with cab attached. This engine is mounted on the straw burner boiler, but was available with a coal burner boiler. Advance Co. made the following: Steam traction engines of simple and compound cylinder, portable steam engines, portable engines on skids, threshing machinery and horse powers. This picture is taken from an 1898 Advance Co. catalog.

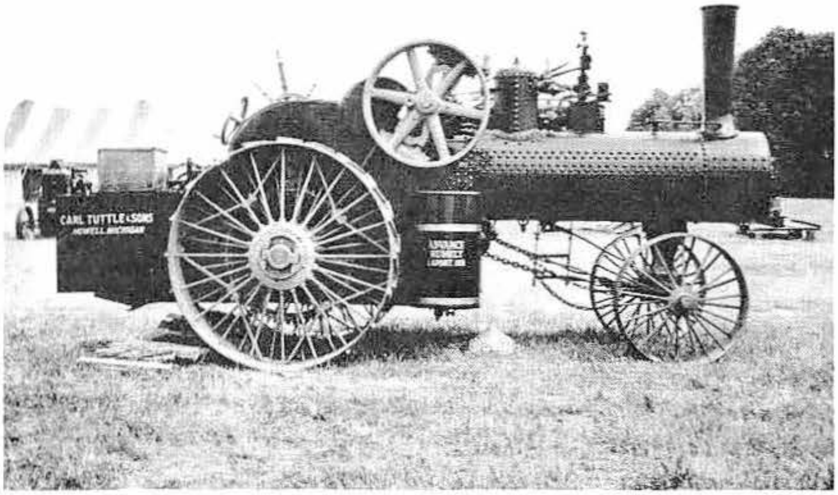


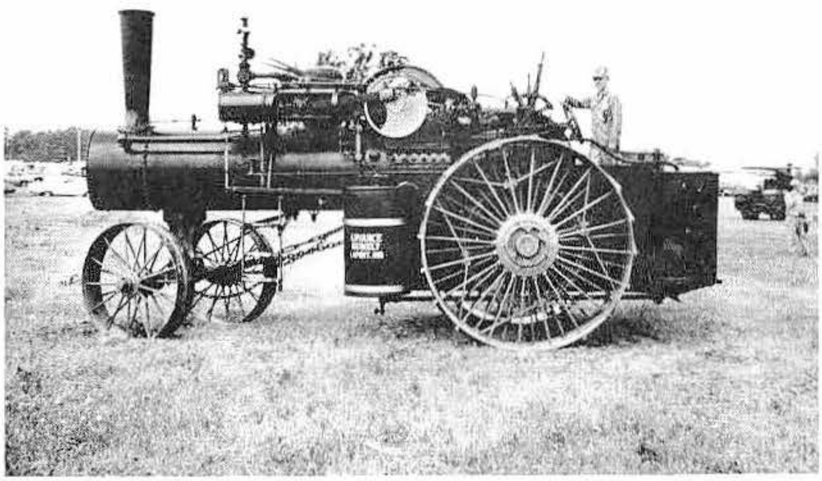
Advance Rumely Co.

In December 1911, Rumely bought out Advance Thresher Co. and Gaar-Scott & Co. A short time later Northwest Thresher Co. was acquired. M. Rumely Co., set up a selling organization to sell the products of the three above companies. This selling setup was known as Rumely Products Co. The same tractor models were continued even after 1915, when financial difficulties forced M. Rumely Co. and the sales agency known as Rumely Products Co. into the hands of a receiver. By reorganization, the firm known as Advance Rumely Co. came into being.

Then in 1924 Advance Rumely bought out Aultman & Taylor Machinery Co., and discontinued the building of A & T tractors and machinery. The Advance Rumely Co. continued in business until 1931. The Allis-Chalmers Corporation on June 1, 1931, acquired most of the assets of the Advance Rumely Co.

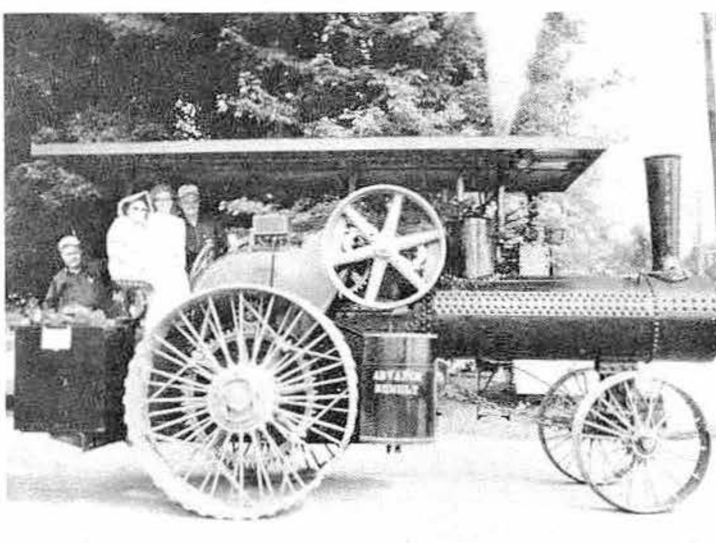
This 16 H.P. Advance-Rumely was built in 1916 by Advance-Rumely Thresher Co. of LaPorte, Ind. This engine, owned by Carl Tuttle of Howell, Mich., appears at the Michigan Steam Engine & Threshers show in Mason, Mich. In December, 1911, Rumely bought out Advance Thresher Co. and Gaar-Scott & Co. A short time later Northwest Thresher Co. was acquired. M. Rumely Co. set up a sales organization to sell the products of the three above companies. This firm was known as Rumely Products. Co.



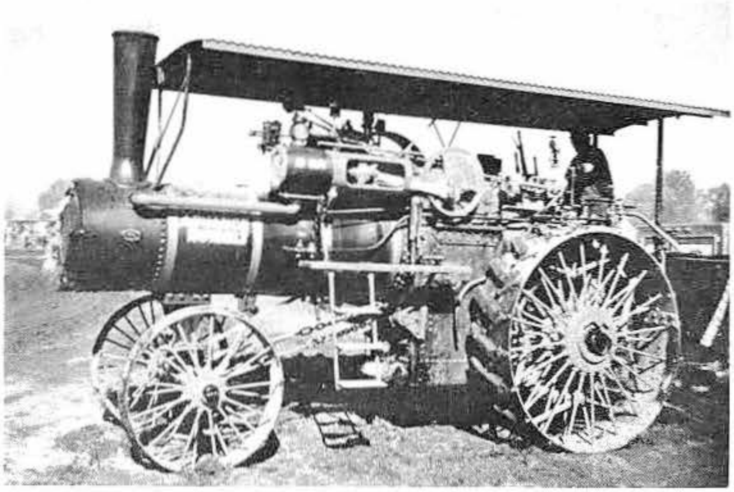


Another view of the 16 H.P. Advance-Rumely owned by Carl Tuttle of Howell, Mich. His son is at the steering wheel.

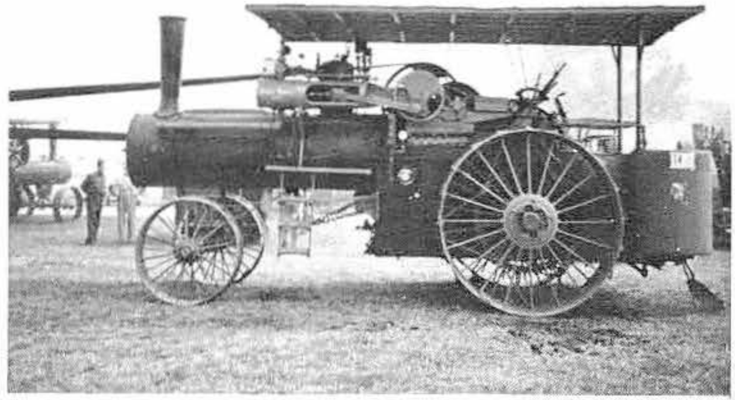
This 18 H.P. Advance-Rumely built in 1917, is owned by Lawrence Apgar of Cedarville, Ohio. It appears here at the Miami Valley Steam Threshers show in London, Ohio. In 1924 Advance-Rumely bought out Aultman & Taylor Machinery Co., and discontinued the building of A & T tractors and machinery.



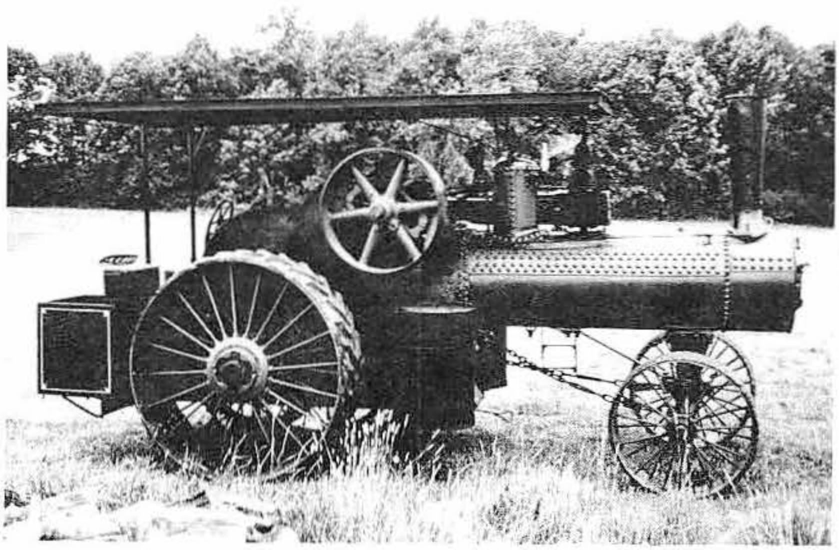
Advance Rumely Co.



A 18 H.P. Advance-Rumely built in 1922. This engine, owned by Leo Damge of Cedar Rapids, Iowa, is at the Midwest Old Settlers & Threshers Assn. show, at Mount Pleasant, Iowa. The Advance-Rumely Co. continued in business until 1931. The Allis-Chalmers Corp., on June 1, 1931, acquired most of the assets of Advance-Rumely.



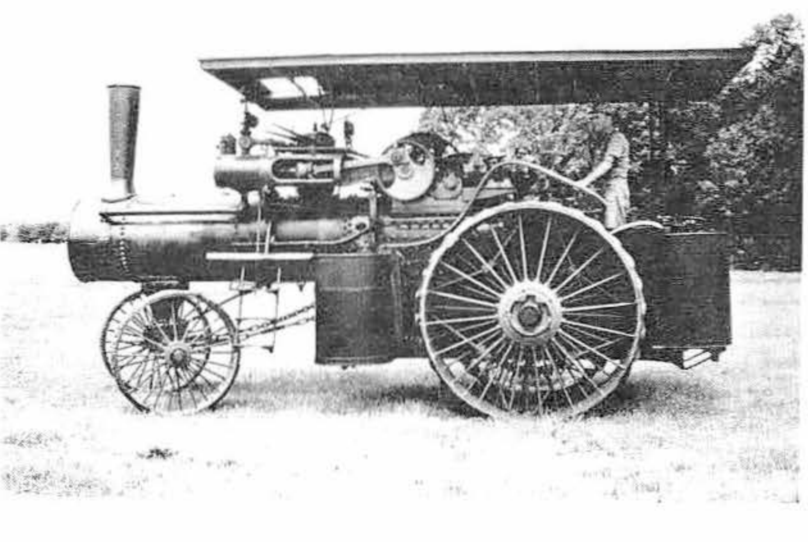
This 20 H.P. Advance-Rumely, built in 1922, is owned by Philip Deeds of Lancaster, Ohio. It is participating in the Miami Valley Steam Threshers show at London, Ohio.

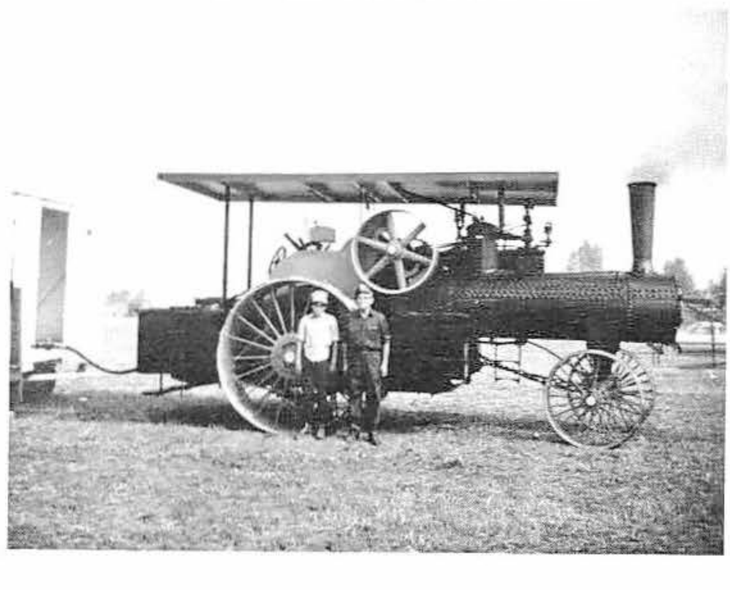


This 22 H.P. Advance-Rumely steam traction engine, built in 1928, is owned by Lynn & Larry Mix of Hastings, Mich. This engine is at the Michigan Steam Engine & Threshers show in Mason, Mich. This engine has the horizontal-type boiler, and was constructed mainly with direct flue.

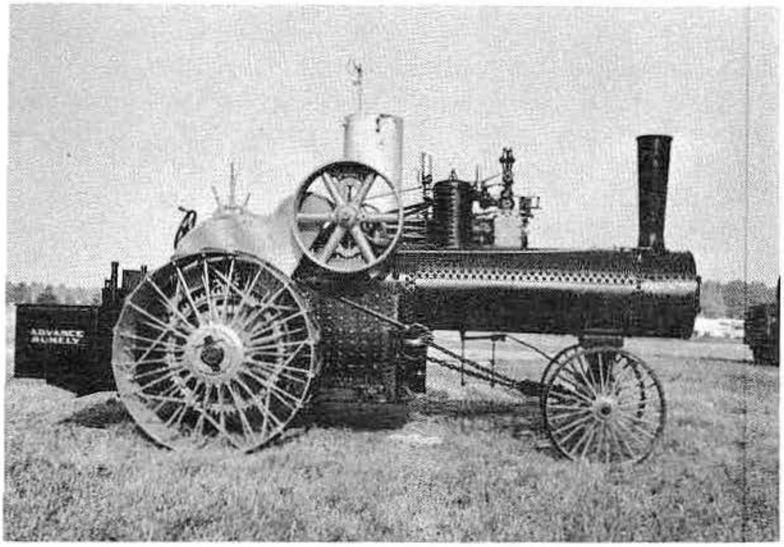
This is the cylinder side of the engine owned by Lynn & Larry Mix of Hastings, Mich.

This 22 H.P. Advance-Rumely steam traction engine, built in 1919, is owned by Clarence Rounds of Lock Port, N.Y. It appears at the New York Steam Engine Assn. show at Canadaigua, N.Y. Clarence Round's engine is #15003. It has a simple cylinder and weighs 15 tons. It cost about $2,500 to $3,000 new.

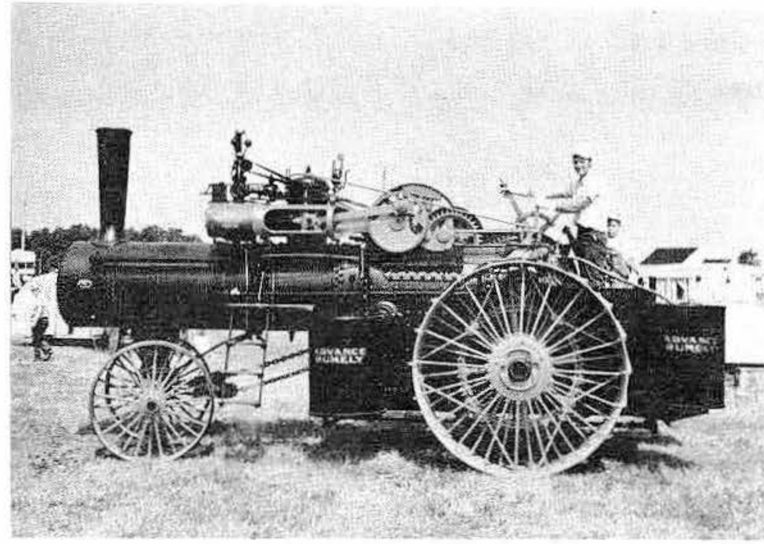




Advance Rumely Co.



This 22 H.P. Advance-Rumely, built in 1917, is owned by Lange Somerville of Mason, Mich. It is running at the Michigan Steam Engine & Threshers show at Mason. Both the horizontal-tube boiler (the more popular) and the vertical-tube boiler were used in these early vehicles. This engine used the horizontal-tube boiler.



Another view of the 22 H.P. Advance-Rumely engine owned by Lange Somerville of Mason, Mich. Lange is at the throttle and his son is with him holding the steering wheel at the Michigan Steam Engine & Threshers show in Mason.

American Engine Co.

Emory W. Mills was secretary and manager of the American Engine Co., located at Jersey City, N.J.

In 1875 this company built its first steam traction engine. Actually, it was built for them by A. N. Field and Son Co., of Jersey city.

It was one of the first steam threshing outfits in this part of the country, and created no little stir and jealousy among the horse and sweep power thresherman. The design of the engine possessed many radical features both in design and construction. Being one of the first light steam traction engines brought out in the days of steam power, it is worthy of somewhat detailed description.

The boiler was of the locomotive fire box, open bottom type, well stayed and braced in the flat surfaces to carry the excessive pressure of one hundred to one hundred and twenty-five pounds. The boiler shell, eighteen inches in diameter, contained three sizes of tubes, three-fourths inches in diameter at the top, one inch in diameter in the middle rows and one and one-fourth inches in the bottom rows, which made it a quick steamer with excellent evaporative capacity. But, since steam room was sacrificed to heating surface, the boiler was apt to prime or carry over water if worked hard or when going down hill, in spite of the hollow dome in the smoke stack which was used as a super-heater.

The engine had a 6 x 6 cylinder. When running at 250 revolutions per minute, the engine would travel two-and-one-half miles per hour on the road under throttling governor control. But for heavy loads and bad roads, the throwing off of the governor belt enabled the operator to get the necessary piston speed to take the thresher in tow.

The American steam traction engine was built in 1875 by the American Engine Company of Jersey City, NJ. It had a 6 x 6 cylinder. The engine ran at 250 revolutions per minute, geared with a differential in the train of gearing to travel at two and one half miles per hour on the road under throttling governor control. For heavy loads and bad roads, the throwing off of the governor belt enabled the operator to get the necessary piston speed to take the thresher in tow.

American - Abell

One of the most picturesque figures among pioneer Canadian manufacturers was born in England, September 17, 1822, and imigrated to Canada as a young man. In 1845, John Abell settled in the village of Woodbridge, 20 miles northwest of Toronto, Ontario. There he obtained employment in the wagon and stage coach factory operated by Wood and Ethridge.

Possessed with much inventive and mechanical ability, young Abell was anxious to get into business for himself and in 1847 he built a small log shop and began the manufacture of mill iron and similar articles. Here he fashioned a lathe and other tools, which he constructed for his own use and built the first steam engine to be used in the district.

Assured of power to drive his machinery, he immediately made plans to increase his output and in January, 1862, moved into a larger building and began the manufacture of plows and other farm machinery.

Business increased rapidly and before many years Abell was employing a hundred workmen and concentrating on the production of a threshing machine which he had developed and which had met with much favor. Abell's machine, which he named the Paragon, was of the apron type and geared for horsepower drive. Later, gang beaters and straw carriers were added and the separator enlarged and improved and adapted for steam power.

In 1874, the establishment was completely destroyed by fire. Undaunted by this misfortune he immediately rebuilt on an enlarged scale taking into consideration the manufacture of portable steam engines which he had been planning for some time. Abell's first engines were of the locomotive boiler type, with an extra long smokestack topped by a screen.

John Abell stole the show at Toronto in 1881 with his exhibit of the first cross compound threshing engine ever built in Canada.

In 1886, Abell built his first traction engine by adding steel rear drive wheels and steering controls to his standard Triumph portable engine. Abell's early tractions were driven by a friction belt from the main shaft to the countershaft.

The sands of time run out for all men. In 1902 this energetic man was in his 80th year, with no family and in failing health. Consequently the big Abell factory had to be sold. He lived until August 7th, 1903, long enough to see that his name would continue to be associated with threshing machinery for years to come—but that's another story.

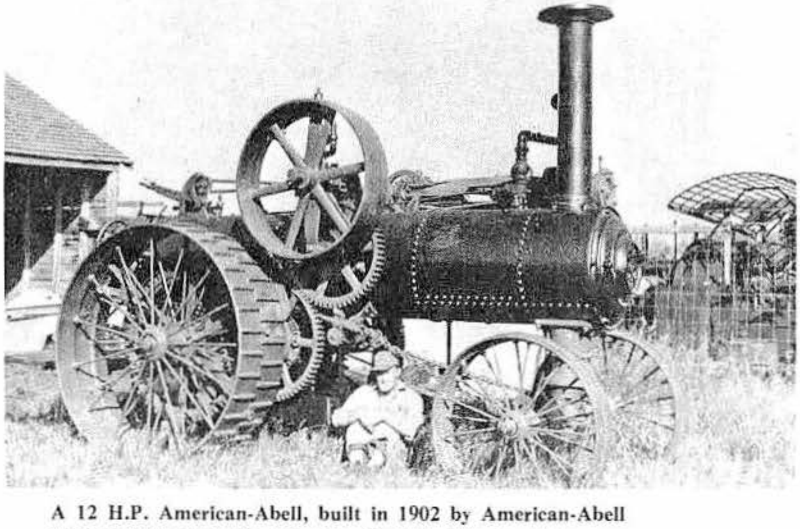
In 1902 the Advance Thresher and the Minneapolis Threshing Machine jointly purchased the John Abell plant in Toronto, and renamed it the American-Abell Engine and Thresher Company Limited. Although American owned, the new company immediately adopted the policy of "Canadian-made goods for Canadian users" and continued without interruption to build the threshing machinery formerly manufactured by the John Abell Engine and Machine Works Co.

Lance Corporal Findlater of the Gordon Highlanders won the Victoria Cross at the assault on the Dargai Hill in Northern India, on October 20th, 1897. Shot through both legs, he sat through a hail of bullets and continued to cheer his hard pressed comrades with the stirring tune "Cock O the North" on his bagpipes.

John Abell was so impressed that he named his new separator the "Cock O' The North" and incorporated the story and illustrations of the epic feat in his catalog. The American-Abell firm went further by adopting a game rooster on a stump as its trademark, and calling the output the "Cock O' The North" line. The American-Abell engines had the figure of a rooster cast in the smoke box door.

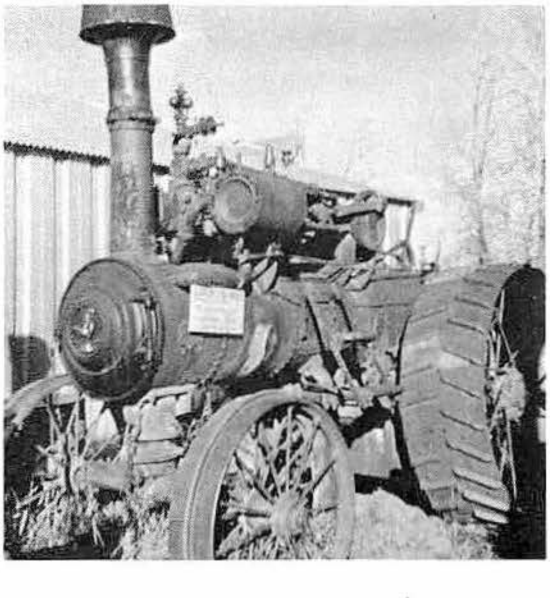
When the great Rumely merger took place in 1912, the American-Abell factory was included and the Cock O' the North line was discontinued.

No further engines were built. The boiler of the last traction engine shipped west now serves as heating plant for the Allis-Chalmers-Rumley building in Saskatoon, Sask. The company built a total of nearly 2,500 farm engines, the majority of which went to the Canadian west where the Cock O' the North line was a famous name, sworn by and at as are the tractors of today.

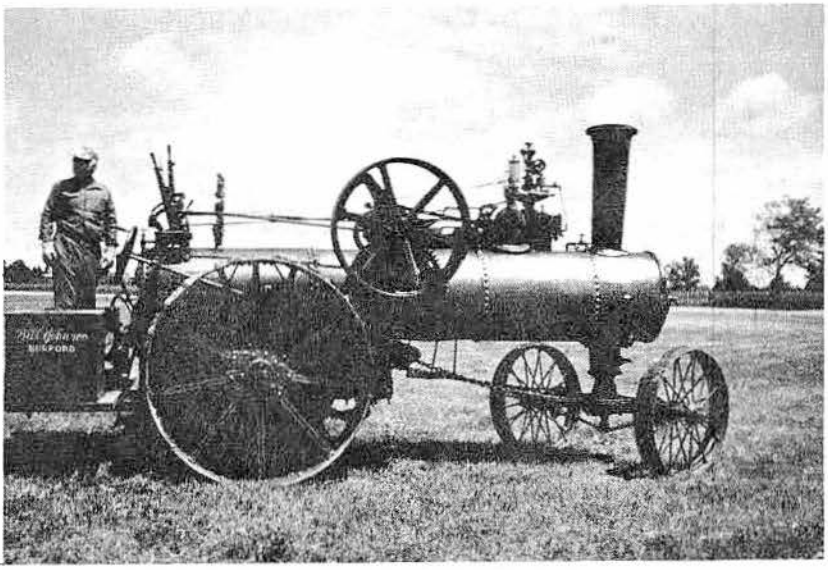


A 12 H.P. American-Abell, built in 1902 by American-Abell Engine & Thresher Co., Toronto, Ontario. These engines were known as the "Cock O' the North." This engine is owned by Reynold's Museum of Wetaskiwin, Alberta, Canada. This picture was supplied by S. G. Reynolds, Museum Manager.

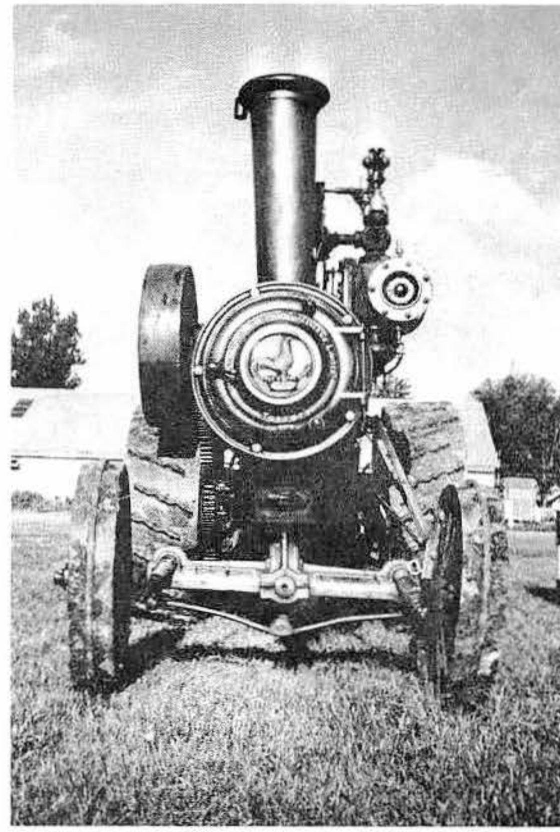
This 22 H.P. American-Abell Kitchener, built in 1903, is owned by Manitoba Agricultural Museum of Austin, Manitoba. It is a cross compound engine. This picture was supplied by W. Moncur, Museum Administrator. In 1902 the Advance Thresher Co. and the Minneapolis Threshing Machine Co. jointly purchased the John Abell plant in Toronto, and renamed it the American-Abell Engine and Thresher Co.



American - Abell

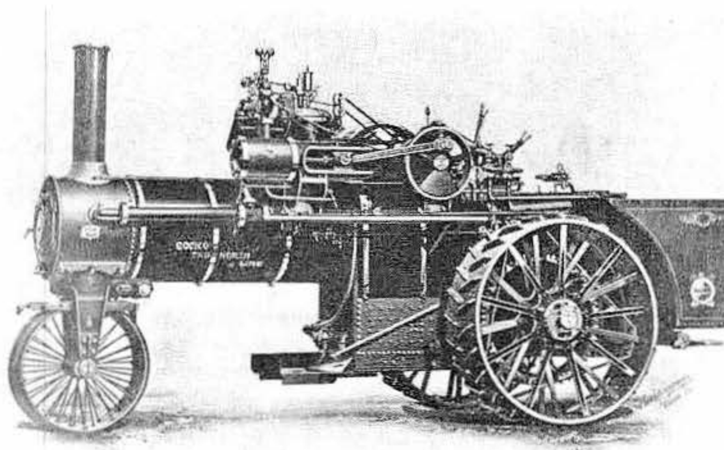


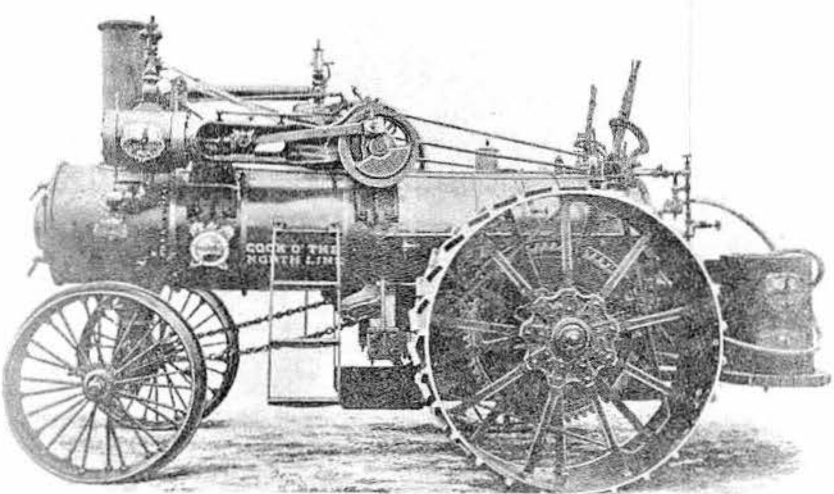
This 20 H.P. American-Abell, built in 1905, is owned by Bill Johnson of Burford, Ontario. It appears at the Norwich and District Historical Society show, Norwich, Ontario. One of the most picturesque figures among pioneer Canadian manufactures, Abell was born in England Sept. 17, 1882, and immigrated to Canada as a young man. In 1845, John Abell settled in the Village of Woodbridge, 20 miles northwest of Toronto. In 1886, John Abell built his first traction engine by adding steel rear drive wheels and steering controls to his standard Triumph portable engine.



A close-up of the front end of the 20 H.P. American-Abell owned by Bill Johnson of Burford.

A 28 H.P. American-Abell built in 1911. This is a simple special plowing engine. It is equipped with the American-Abell straight line balance valve. The pump was fed by gravity from the bottom of the supply tank and was driven by an intermediate gear wheel, thus assuring perfect water supply. This engine was equipped with a steam pump and injector, a water heater, and coal bunker on top of the water tank. The tank had a capacity of 462 gallons.

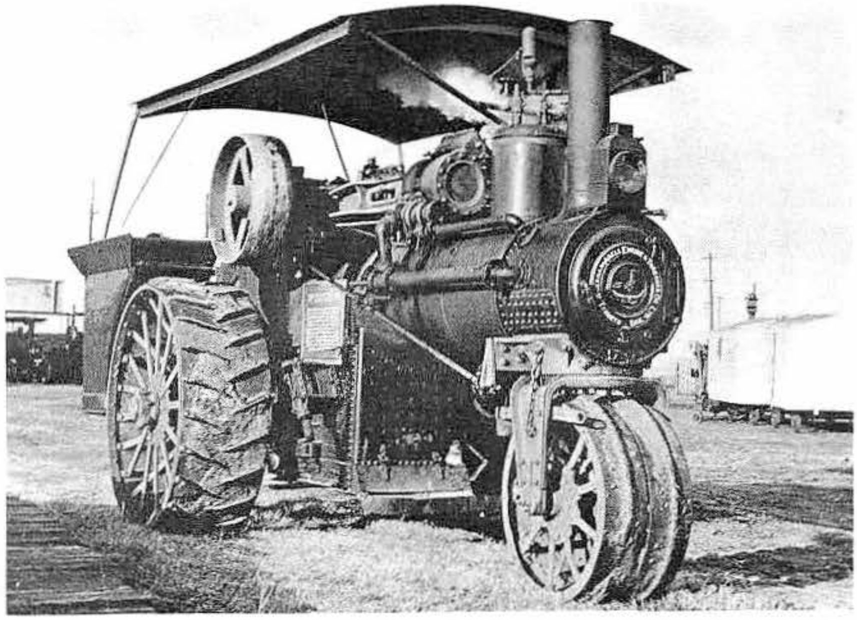


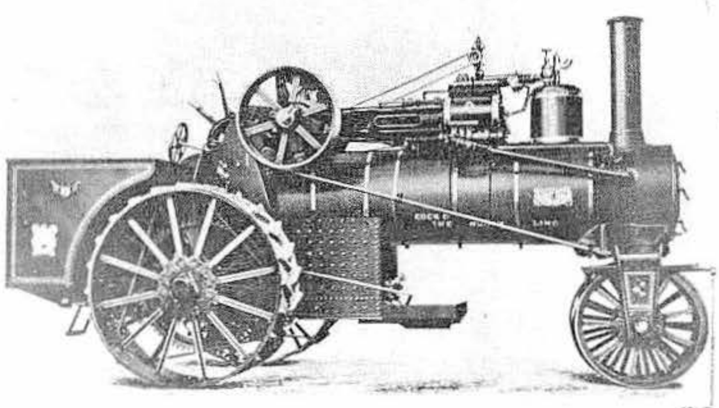


A 22 H.P. American-Abell built in 1911. It is a straight line balance valve engine. When the great Rumely merger took place in 1912, the American-Abell factory was included and the "Cock O' the North" line was discontinued.

American - Abell

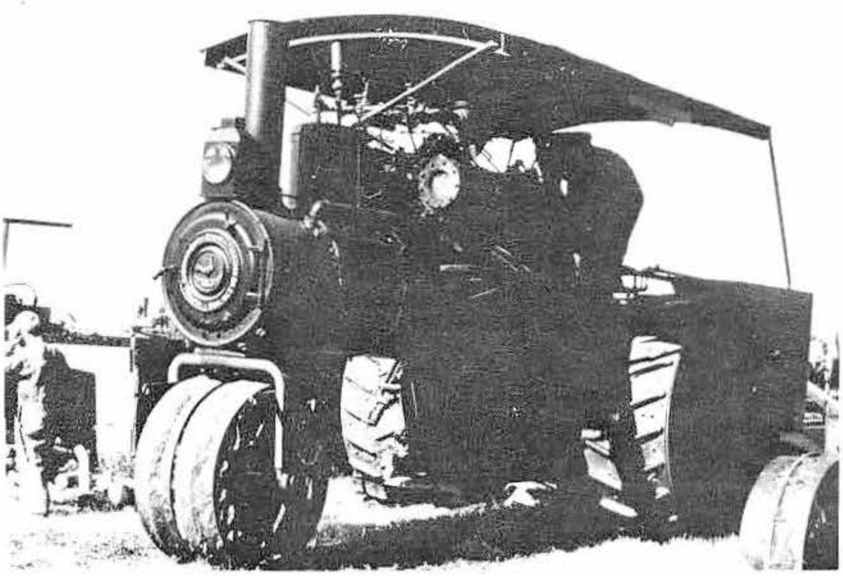
This 32-120 H.P. American-Abell, built in 1911, is owned by West Development Museum of Saskatoon, Saskatchewan. The picture was supplied by George Shepherd, Museum Curator. This "Cock O' the North" 32-120 H.P. American Abell, weighing over 25 tons in working order, is the heaviest engine in the Museum. Sold new in 1911, it plowed and threshed at Estevan until 1929. The last owner was the Porcupine Lumber Co. of Pelly, which used it until 1949. When received at the Museum, the steering gear was gone, but it was rebuilt by the museum mechanics. Its maximum consumption was 5,000 pounds of coal daily. The engine was rated at 32 horsepower on the draw bar and 120 on the belt. It is in excellent operating condition.



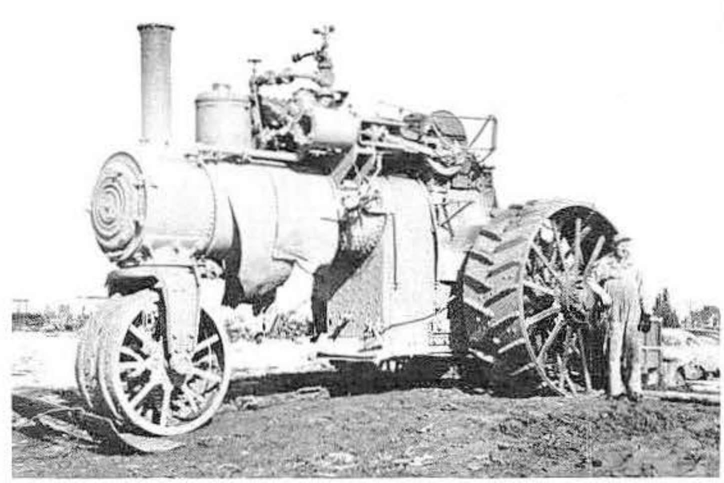


This 32 H.P. American-Abell, built 1911, is a cross compound rear mount special plowing engine. It was equipped with intercepting valve, power pump, steam re-heater, water heater, steam pump, injector, and steam syphon. American-Abell straight line balance valve was used in both cylinders.

Another view of the 32-120 H.P. American-Abell owned by West Development Museum of Saskatoon. This picture was supplied by Bernard Porter, of Steam-Era.



This 32-120 H.P. American-Abell, built in 1911, is owned by Reynold's Museum of Wetaskiwin, Alberta. This picture was supplied by S. G. Reynolds, Museum Manager. It shows the steam engine as it arrived, after being hauled in from the bush. This engine is now being restored to running order. To the owners of steam traction engines, their prize possession is more than a machine. In many cases, it was rescued from junk, then pampered and treated with kid gloves and tender loving care.



Ames Iron Works

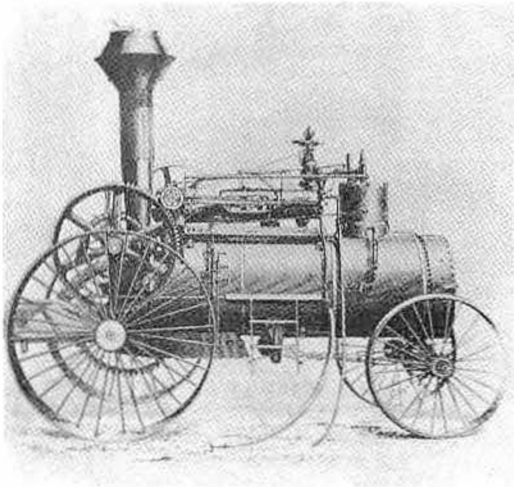
The oldest Oswego, N.Y., industrial concern still carrying on today (1975) is the Ames Iron Works.

Its recorded history coincides with that of the incorporation of the City of Oswego. Founded in the 1840's as the Talcott and Underhill Co., it first manufactured winches for use on lake craft, then plying in and out of Oswego harbor. In 1854 it was purchased by Henry M. Ames, who was the founder of the Ames Iron Works. From that date until 1919, the plant was wholly or partially owned by different members of the Ames family. The last of them to be connected with the concern were Alfred H. Ames and Allen Ames who retired from the business when it was sold to the parent corporation in 1919, which is the Pierce Butler Radiator Corp.

During the entire life of the Ames Iron Works, the company devoted its effort entirely to the development of steam engines, steam traction engines, and steam boilers. At no time has it manufactured as a standard line any other kind of equipment. Its products have gone to every part of the civilized world.

All things being equal, the company may be considered as one of the foremost builders of steam engines in America.

During the World War II years the company served in outstanding fashion. Its present production reaches $5,000,000 annually. Employing some 300 people, the annual payrolls of the industry reach to $7,000,000.

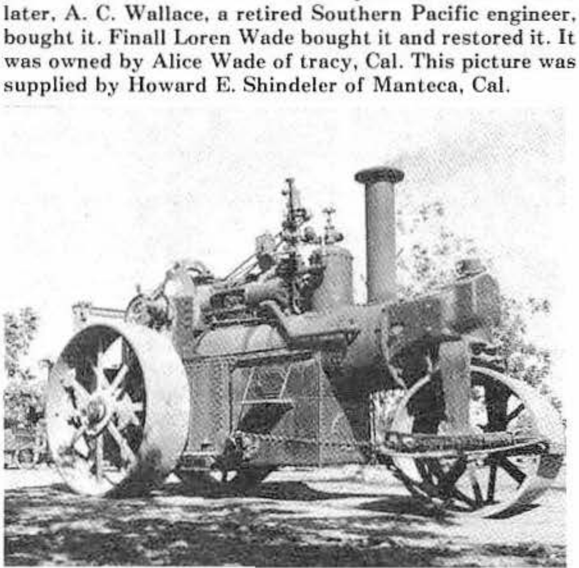


A 12 H.P. Ames steam traction engine built in 1885. This engine was built by Ames Iron Works of Oswego, N.Y., the oldest Oswego industrial concern still carrying on today (1975). The Ames Iron Works sold all the rights for making steam traction engines to the Skinner Engine Co. of Erie, Pa. This company did not make any steam traction engines but supplied parts for the engines already made by Ames Iron Works.

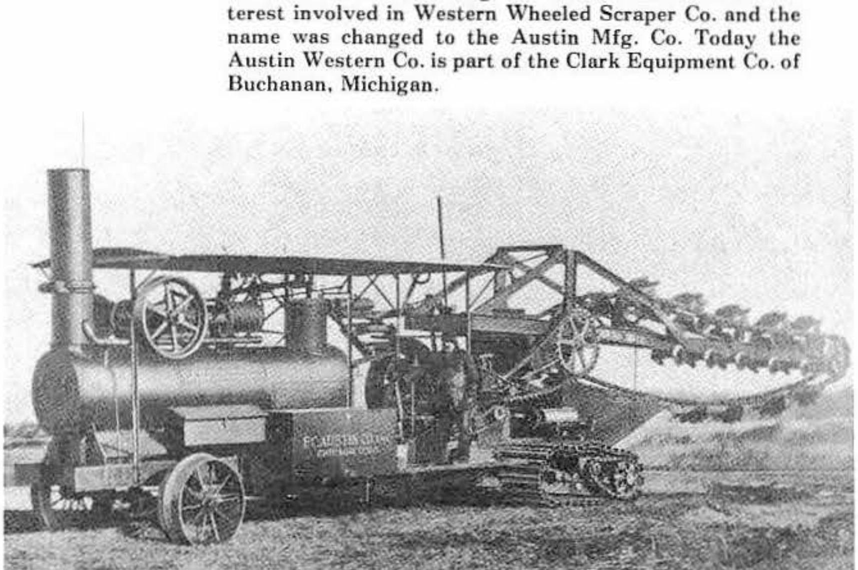
F. C. Austin Co.

The F. C. Austin Manufacturing Co. of Harvey, Ill. was incorporated under the laws of the state of Illinois on July 10, 1888. Prior to September 24, 1902, the F. C. Austin Manufacturing Co. was sold to the same interest involved in Western Wheeled Scraper Co. of Mount Pleasant, Iowa, and on that date, the name was changed from the F. C. Austin Manufacturing Co. to the Austin Manufacturing Co. On July 7, 1934, the Western-Austin Co. was incorporated under the laws of the state of Illinois, effecting the consolidation of the Western Wheeled Scraper Company and the Austin Manufacturing Co. As of Jan. 1, 1944, the name of the corporation was changed from Western-Austin Co. to Austin-Western Co. On March 8, 1951 the Baldwin-Lima Hamilton Corp. of Philadelphia, Pa. acquired all common stock of Austin-Western Co. Then on July 1965 Armour and Co. of Chicago, Ill. purchased all of the Baldwin-Lima-Hamilton Corp. of Philadelphia. In December 1970 the Greyhound Corp. purchased all of Armour and Co. and it's subsidiaries. In May 1971 the Clark Equipment Co. of Buchanan, Mich. purchased only the Construction Equipment Division from Greyhound.

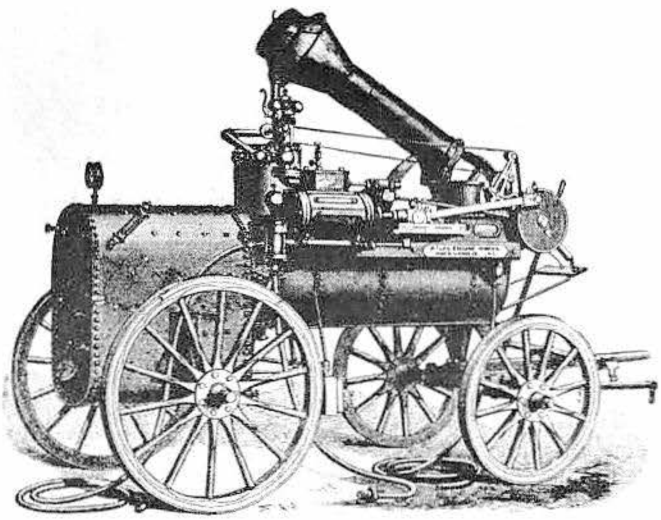
This six-ton Austin-Chicago steam roller was owned and put into top condition by the late Loren Wade of Tracy, Cal. It was built by the Austin Mfg. Co., Illinois. It was originally owned by the city of Stockton, Cal. Then it was sold at an auction in 1948 to a local junk dealer. Sometime later, A. C. Wallace, a retired Southern Pacific engineer, bought it. Finall Loren Wade bought it and restored it. It was owned by Alice Wade of tracy, Cal. This picture was supplied by Howard E. Shindeler of Manteca, Cal.



This F. C. Austin steam trenching machine was built at Harvey, Ill. around the early 1900's. On September 24, 1902 the F.C. Austin Mfg. Co. was sold to the same interest involved in Western Wheeled Scraper Co. and the name was changed to the Austin Mfg. Co. Today the Austin Western Co. is part of the Clark Equipment Co. of Buchanan, Michigan.



Atlas Co.



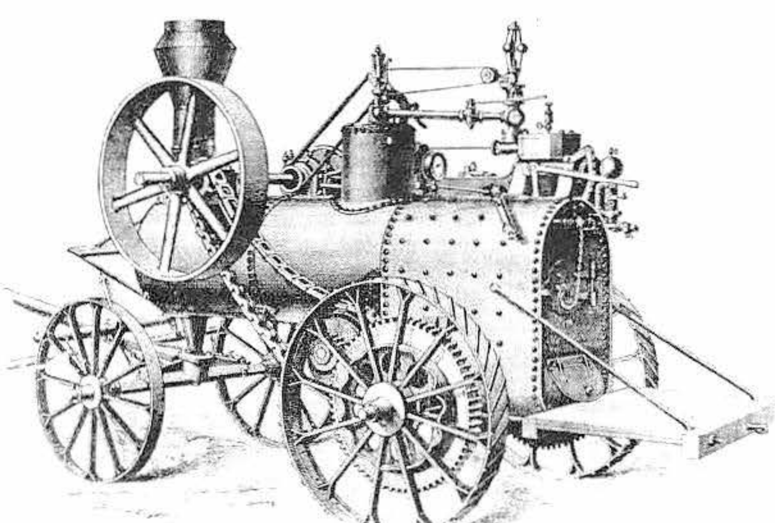
The Atlas portable steam engine was made in 1881 by the Atlas Engine Works of Indianapolis, Ind. This portable was made in 8, 10, 12, 15, 20, 25 and 30 H.P. models. It was a typical portable steam engine for threshing and other belt work of the 1880s. Atlas also made steam traction engines.

The Atlas Company was originally founded as the Indianapol Car and Machine Works in 1872. Two years later it was r organized as the Atlas Works. In 1878 another reorganization r sulted in its receiving the title that made it a famous concern– the Atlas Engine Works.

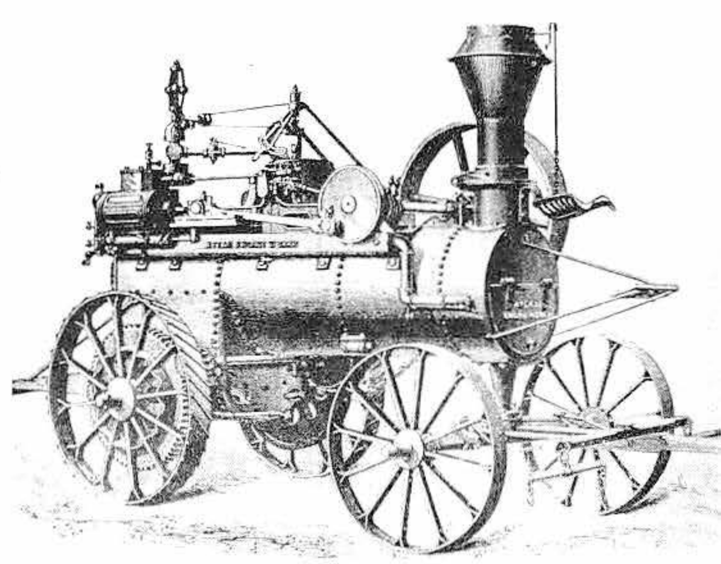
The plant occupied 65 acres of ground in the northeastern pa of the city, lying immediately northeast of 19th Street and Colun bia Ave. in Indianapolis.

This company built steam traction engines, small portab engines and some other lines. Products were sold in India, Afric Australia, China, Japan, and countries in Europe. In 1912, Jame W. Lyons of Chicago took over the Atlas Engine Works. The ne name became the Lyons Atlas. At this time the company starte to make the diesel oil engine and the much talked of Siler Knight gasoline engine. In addition to these, the company als made in large quantities poppet-valve automobile engine possibly the only steam tractor engine company to go into th manufacture of automotive gasoline engines for other vehic manufacturers.

THE ATLAS PORTABLE ENGINE



This Atlas traction engine, made in 1881, was horse-steered and, more often than not horse controlled. It was made by the Atlas Engine Works of Indianapolis, Ind. This marked the transition from a portable steam engine to the true traction engine of a few years later.



This is the right hand or cylinder side of the Atlas traction engine. Made in 1881, it was horse-steered.

C. Aultman Co.

The C. Aultman Company was established in 1851, by Cor- elius Aultman, a native of the Buckeye State. He was born on a arm in Osnaburg Township, Stark County, Ohio, just two miles ast of the city of Canton, on March 10, 1827. His parents were acob and Elizabeth Aultman who migrated from Pennsylvania o Ohio. Soon after the birth of Cornelius they moved to Union- own, Stark County, and within a year there, the father died, eaving his wife and two-year-old son.

As was the custom of that day, the education which C. Aultman eceived was meager indeed, particularly when compared with resent day educational standards. He spent altogether about ight months in the village school. Thereafter he was thrown argely upon his own resources.

When he was about 14 years of age he went to work with his un- le at the millwright trade. After spending a few months at this vork he returned to live with his mother who in the meantime had narried John Miller, a farmer living near Greentown, Ohio.

Soon after his return to Greentown, he engaged in learning to nanufacture spinning wheels and grain cradles. Following the nastery of this business, he entered the machine shop of Wise ınd Ball in the spring of 1848 and worked here for a period of two ears. Later he was to marry the daughter of Mr. Wise. In this mall shop he learned the trade of wheelwright and general nachine work. The output of this shop consisted of wheels for ransportation purposes, plows, mill construction and spinning.

Mr. Aultman established the C. Aultman Co. in 1851. Then he established the Aultman Taylor Machinery Co. The Aultman Taylor Machinery Co. stopped building steam traction engines about 1924. They built about 5,870 steam traction engines.

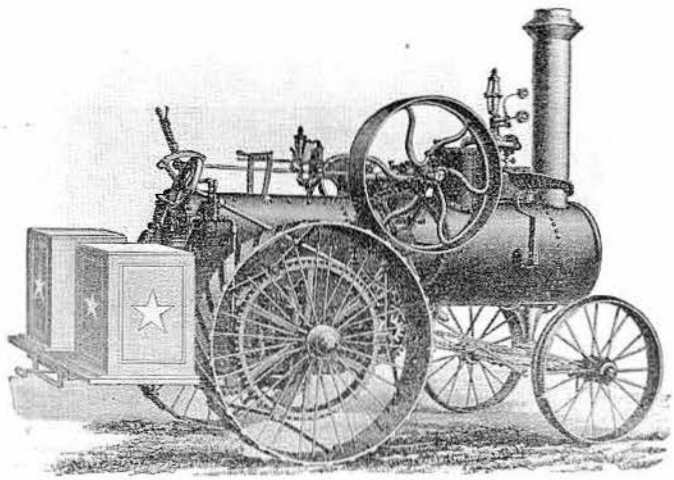
The Aultman Company made the following steam traction engines (Types): Star traction for coal or wood, the Mogul return fuel engine, the compound Mogul engine, the upright-boiler Canton Monitor, and the Double Star road locomotive, the last engine built. The Aultman Company also made the Monitor semi-portable engine and the steam traction engine Phoenix.

The company also made the Star water and fuel tanks, Low-Down tank force pump, American thresher with folding stacker, a wind stacker, sawmills, and horse powers.

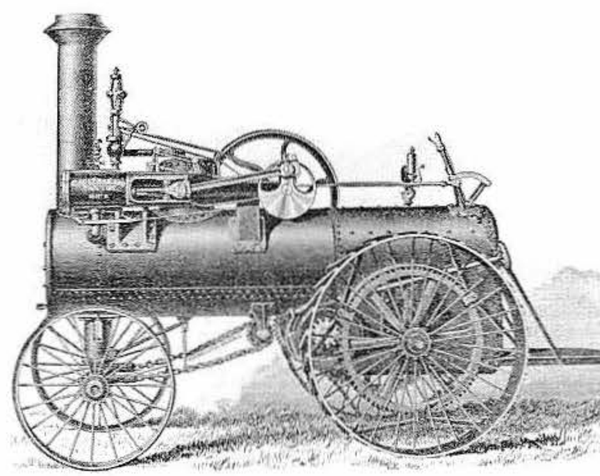
The Aultman Company became the Aultman-Taylor Machinery company and later was bought out by Allis-Chalmers. Today the home office of Allis-Chalmers Corp., is Milwaukee, Wisc.

The Aultman-Taylor Machinery Company made the following: The Aultman & Taylor steam traction engines; Bevel Gear wood and coal burners that used the Woolf patent valve gear; spur gear tractions mounted on the John Abell patent boiler; straw coal or wood burners mounted on the celebrated A. & T. high pressure, water bottom fire box boiler; and portable steam farm engines.

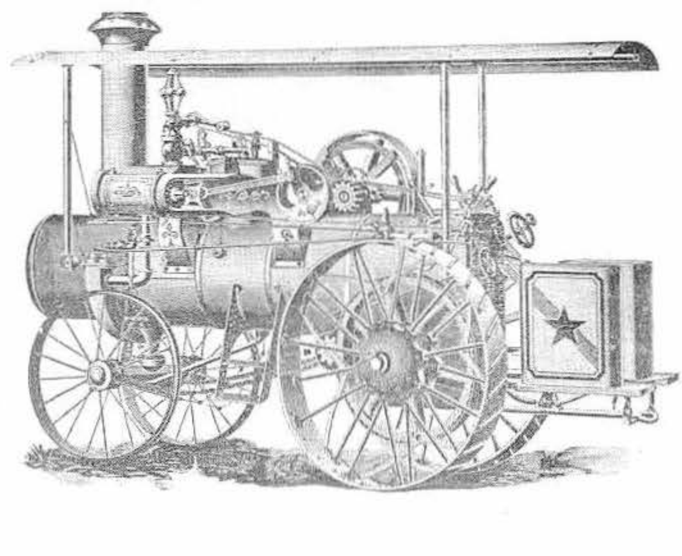
The company also made the New Century Separator, with blower and self-feeder; the New Century rice thresher; Aultman-Taylor Matchless clover and alfalfa hullers; Aultman-Taylor water tanks, Farm and Plantation mill; saw mills, and horse powers.



A 10 H.P., C. Aultman Star engine was built by the C. Aultman Co. of Canton, Ohio in 1889. This engine's boiler had a diameter of 28 inches, and was 9-feet 6-inches over all. The shell was made of the best quality of boiler steel. It had a guaranteed tensile strength of 55,000 pounds per square inch. Longitudinal seams were double riveted. The crown sheet diped down and backward, thus assuring its being covered with water in descending hills.

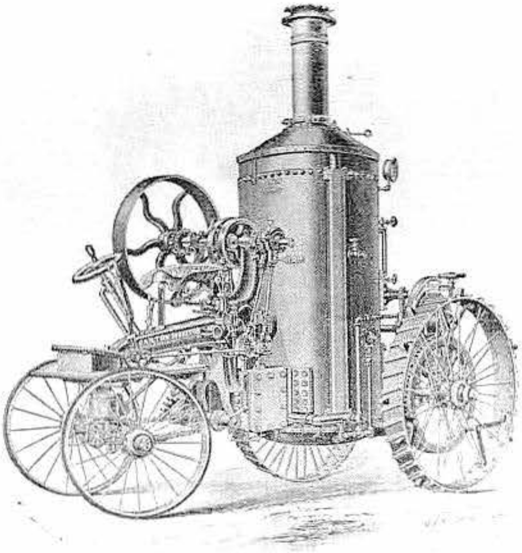


A 10 H.P. C. Aultman Star engine of 1889. This engine was built by the C. Aultman Co. of Canton, Ohio. The Star engine was mounted in the most substantial manner. The entire weight of the engine and boiler rested upon solid steel axles that reached from wheel to wheel. The wheels were all of wrought iron and steel, except the hub.

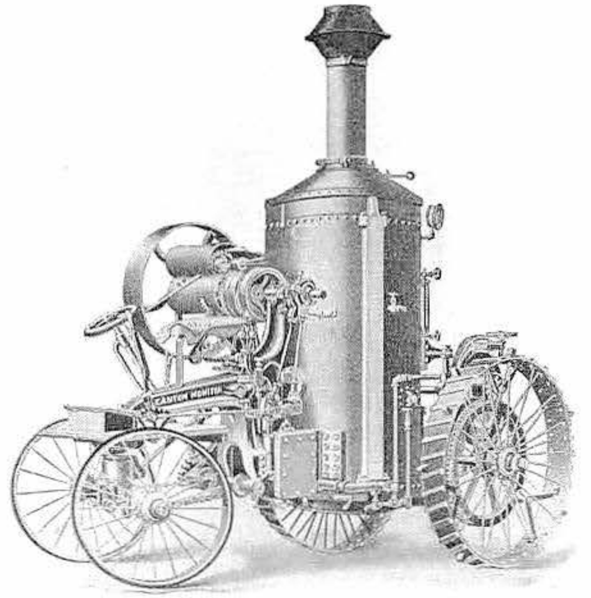


A 10 H.P. C. Aultman Star engine of 1900. The Star engine was placed on the market and was first thoroughly tested through the season of 1887. The boiler of the 1900 engine retained its diameter of 28 inches, and was 9-feet 6-inches over all. It had a guaranteed tensile strength of 55,000 pounds per square inch.

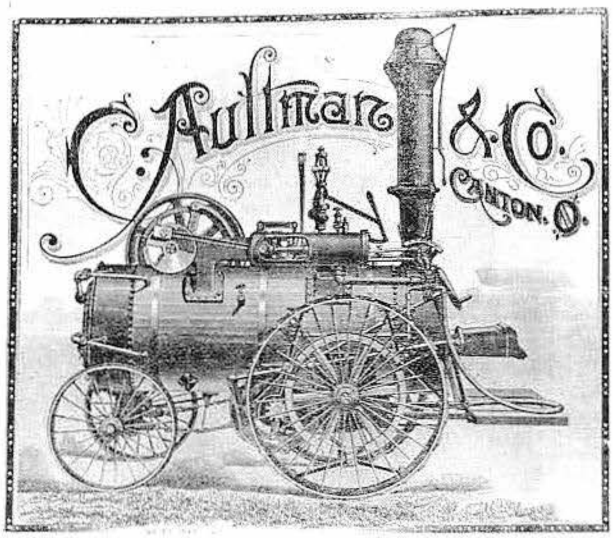
C. Aultman Co.



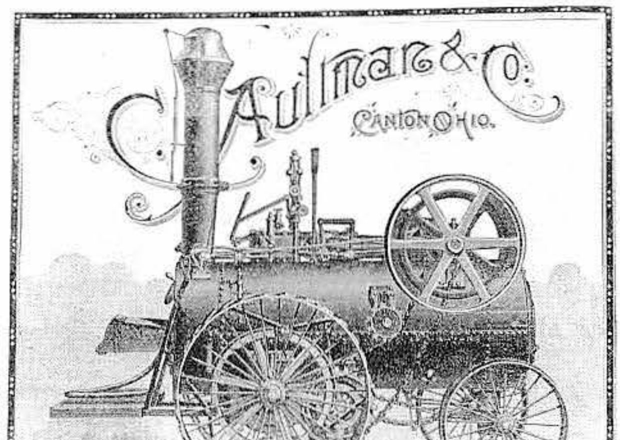
A 10 H.P. C. Aultman Monitor traction engine of 1889. One of this engine's advantages was its convenience. The cylinder was low down, where all parts were easily reached for adjusting, oiling and cleaning. The engine turned as quickly, and in as little space, as a cart.



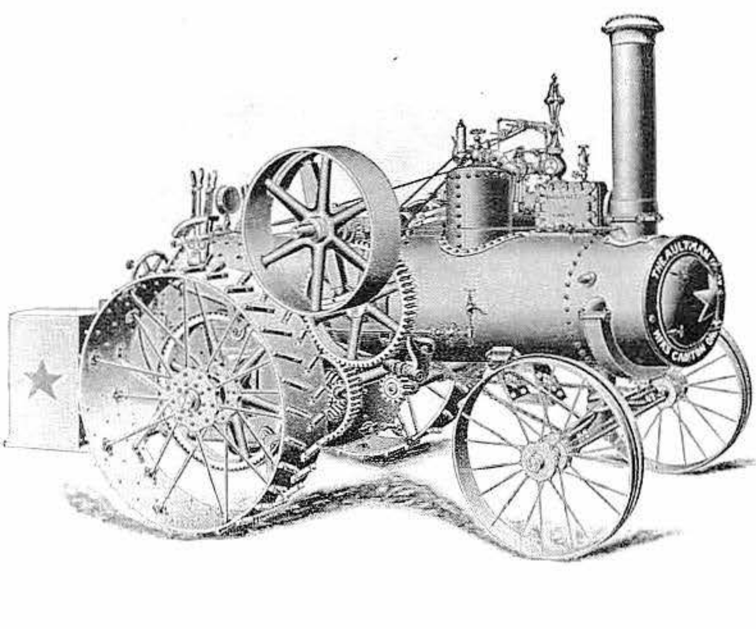
A 12 H.P. C. Aultman Canton Monitor steam traction engine of 1903. This engine had water above and all around the fire-box, had knobbled iron flues, balanced steam valve, locomotive link, double-speed gear, differential gear and ground wheels.



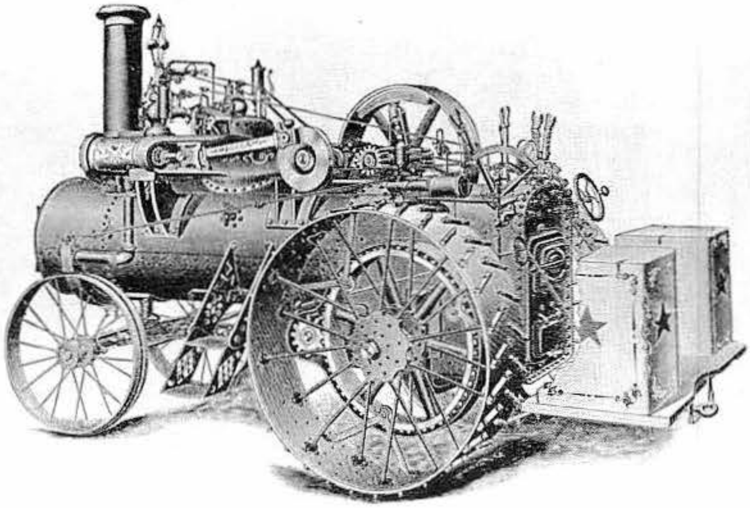
The 12 H.P. C. Aultman Phoenix steam traction engine of 1889 used a return flue boiler, with the seams double riveted. The steel plates of which the boiler was made had a tensile strength of 55,000 pounds, government test. The completed boilers were submitted to a test of 175 pounds pressure with cold water and a test with steam after the engine had been attached. It was only after these tests had been applied that the wood casing was put on. The boiler was cased in wood to prevent condensation.



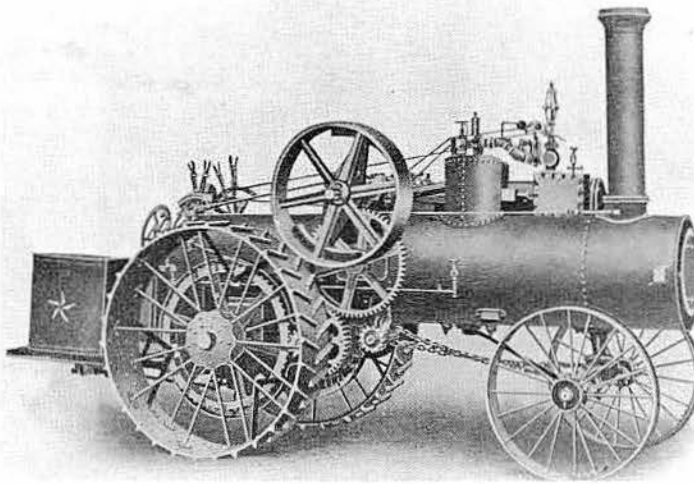
A 12 H.P. C. Aultman Phoenix steam traction engine of 1889. This engine used friction clutch, automatic exhaust, balance valve, wide steel wheels, mud spurs, inspirator and pump, and a unique water head. The Phoenix was provided with compensating gears to facilitate turning, an attachment for reversing the engine, and an automatic oiler for the steam chest and cylinder bearings.



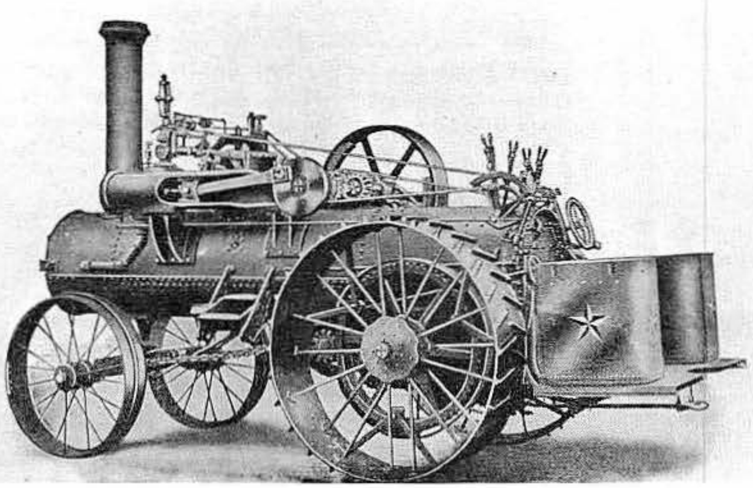
This 12 H.P. Star steam traction engine was illustrated in a 1902 C. Aultman Co. catalog. The boiler heads were thoroughly braced internally, and the shell was reinforced by an extra plate riveted inside the shell, just behind the steam dome where the main shaft, gearing and fly wheel were carried.



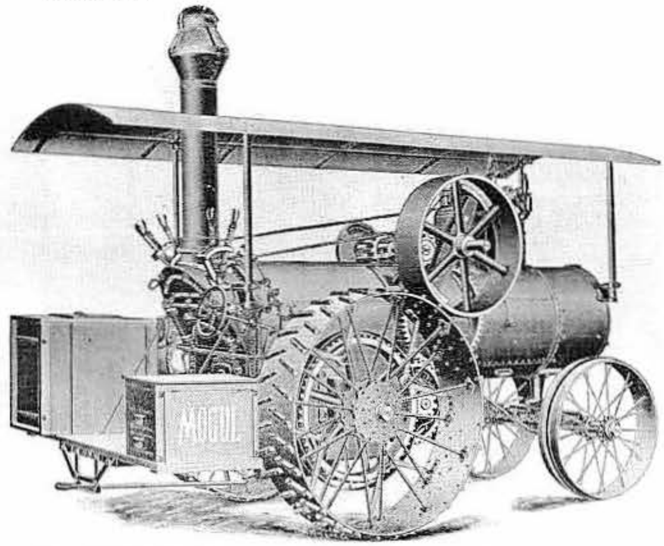
A 12 H.P. C. Aultman Star engine of 1902. No boiler can be kept up without frequent cleaning. The Star engine's boiler provided ample hand holes and a blow-off for the purpose of thoroughly cleaning the entire boiler, especially the spaces around the fire-box.



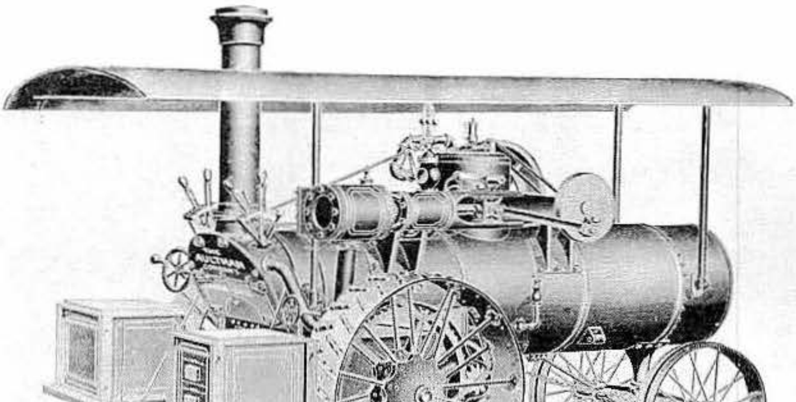
A 14 H.P. C. Aultman Co. Star engine of 1903. On all the Star engines, a center-hung locomotive link valve gear was used, giving the best possible steam distribution. A differential gear was used on all types, properly distributing power between traction wheels.



A 14 H.P. Star steam traction engine was shown in a 1905 C. Aultman Co. catalog. This engine burned coal or wood. It used the locomotive type boiler. Water entirely surrounded the fire box. In all of the single cylinder engines built in 1905 the boiler carried a double thickness of plate under the main shaft. The flues were made of the best knobbled iron.

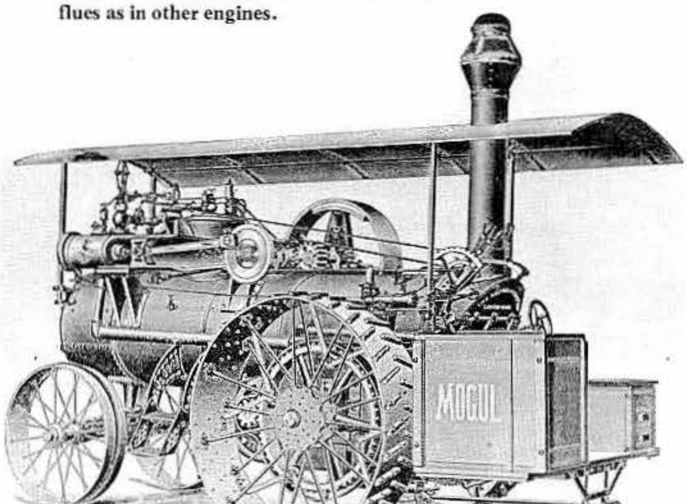


The 20 H.P. C. Aultman Co. Mogul steam traction engine of 1902 carried a return flue tubular boiler of the fire-box type. The bottom of the fire-box of the straw burner was so designed as to present a broad flat grate surface upon which to burn the straw. The arrangement of the grates, fire-box and flues were such that the straw was consumed in the fire-box and not in the flues as in other engines.



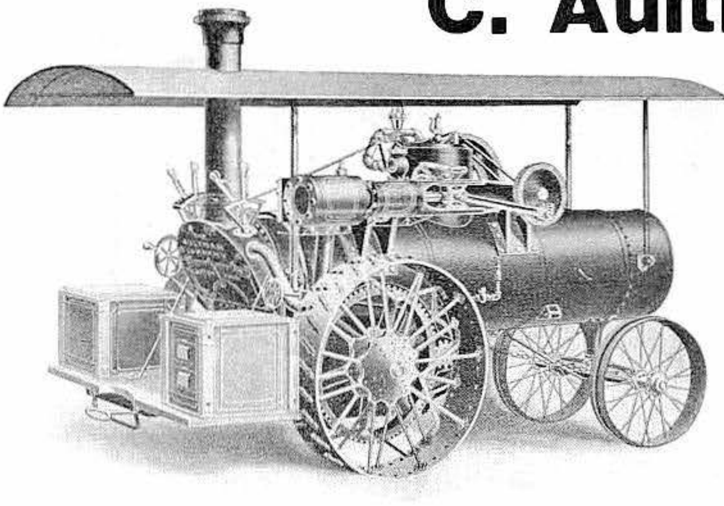
COMPOUND MOGUL ENGINE.

The 25 H.P. C. Aultman Co. Mogul Compound of 1902 offered high economy of fuel and water. The boilers were made to carry the extra pressure of steam which was necessary to give high efficiency in the compound engine.

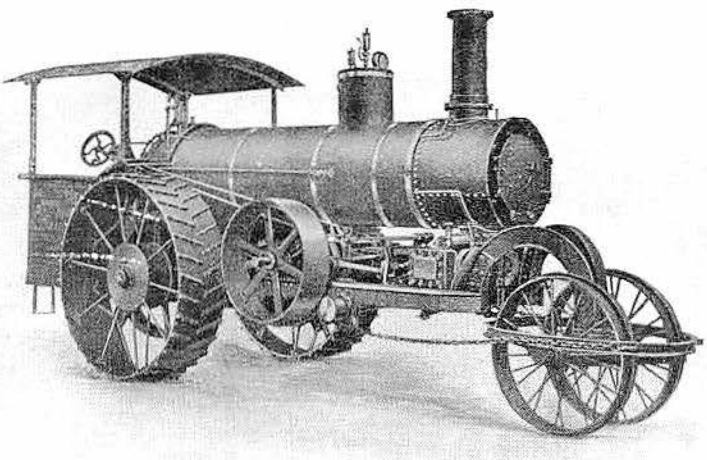


A 20 H.P. C. Aultman Co. Mogul steam traction engine of 1903. The C. Aultman Co. was established in 1851 by Cornelius Aultman, a native of Ohio.

C. Aultman Co.

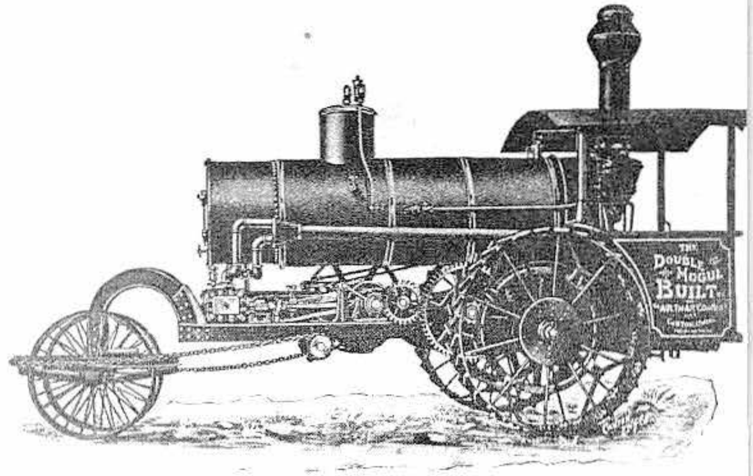


The 25 H.P. C. Aultman Mogul Compound of 1903 was an oil burner which burned either the paraffin oils of Pennsylvania and Ohio or the asphalt oils of Texas and California.

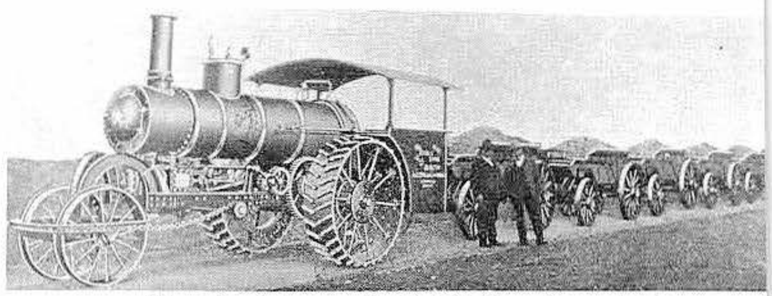


The 22 H.P. Aultman Star undermounted double cylinder steam traction engine built in 1905 was used for plowing, grading, making roads and irrigation ditches, and heavy hauling about mines, factories, lumber camps, and wherever heavy and constant work was called for. The engine had two cylinders set quartering with no dead point. It used steel gears, double speed gears, special crank shaft, balanced valve, link motion, automatic exhaust, and ball bearings in the front truck.

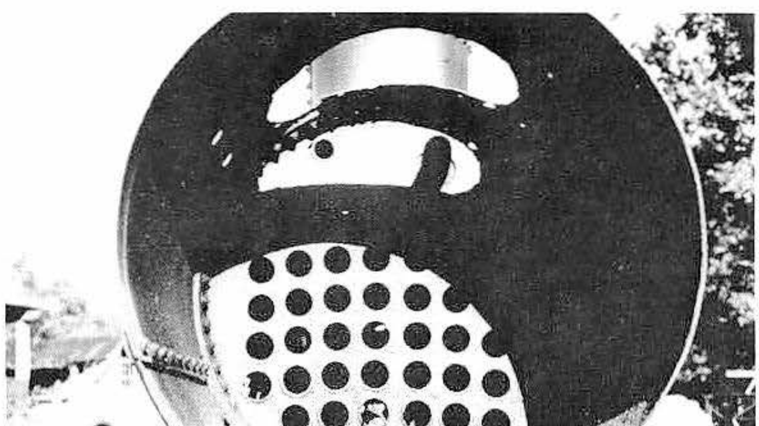
This 22 H.P. Aultman Star undermounted double cylinder steam engine, built in 1904, is owned by Robert L. Lefever of Lancaster, Pa. Lefever is now restoring his engine to running order.



The C. Aultman Double Mogul steam traction undermount engine was substantially the same as the Double Star steam traction engine, except that it had the Mogul boiler. It was especially designed for burning straw, wood and coal. It used two cylinders set quartering, with no dead point, had steel gears, double speed gears, a special crank shaft, balanced valve, link motion, automatic exhaust, and ball bearings in the front truck.



This picture, taken near San Antonio, Tex., shows a C. Aultman Double Star road locomotive undermounted steam traction engine pulling a load of 56,000 pounds of gravel. This picture was taken in 1905.



These are the flues of the 22 H.P. Alutman Star undermounted double cylinder steam engine owned by Robert L. Lefever of Lancaster, Pa.

Aultman - Taylor

Cornelius Aultman established the C. Aultman Company in 351. Then he established the Aultman Taylor Machinery Co. he Aultman Taylor Machinery Company stopped building eam traction engines about 1924. It built about 5,870 steam action engines. The Aultman-Taylor Machinery Co. was subseuently bought out by Allis-Chalmers.

The Aultman-Taylor Machinery Co. made the following: The ultman &Taylor steam traction engines, Bevel Gear wood and oal burners that used the Woolf patent valve gear; spur gear actions mounted on the John Abell patent boiler; a straw, coal r wood burner mounted on the celebrated A. & T. high pressure, ater bottom fire box boiler; and portable steam farm engines.

A-T also made the New Century separator, with blower and lf-feeder; the New Century rice thresher; Aultman-Taylor water nks, Farm and Plantation mill; saw mills, and horse powers.

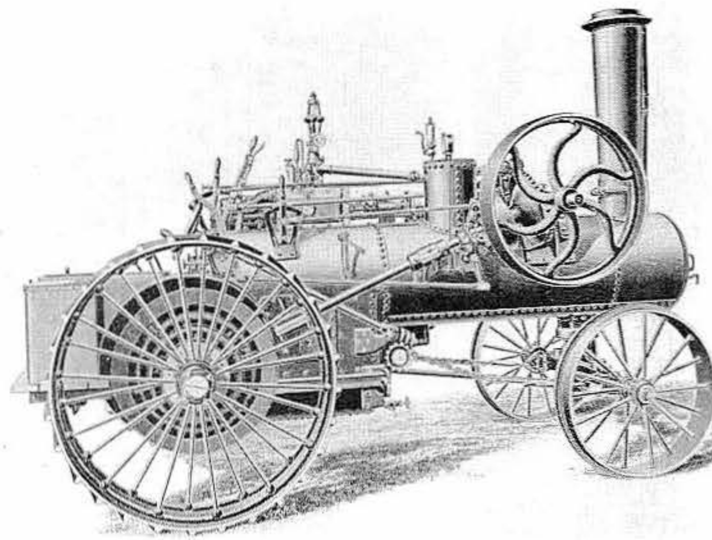
The Aultman-Taylor engine boilers were of the high pressure pe, safe for a working pressure of 150 lbs. They were tested un-er pressures of 200 lbs. hydrostatic and 150 lbs. steam.

The traction was built on a steel frame, independent of the oiler. The rear axle, countershaft, and the bracket which ustains them were entirely free from the boiler. These were fast-ned to the steel frame by four radius links, two above and two elow the channel. The channels ran through the brackets and sted on heavy springs on top of the box which contains the axle his box being the bottom part of the bracket).

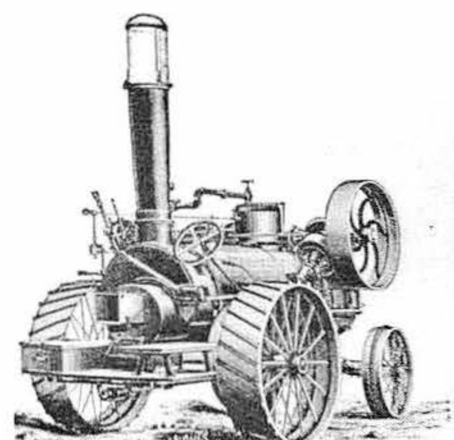
The compensating gear had four compensating pinions. The evel face gears were made very heavy and kept in mesh with the ur compensating pinions by means of a heavy steel adjustable ollar on the outer end of the countershaft. The crankshaft was ounted on self-oiling pillow blocks, with the bed plate and llow cast in one piece. The straw burner steam traction engine as mounted on a John Abell type of direct firing boiler.

The friction clutch was composed of two wooden shoes that ressed on the inner edge of the fly wheel rim. The shoes slid dially in a spider that was loose on the shaft—this spider was stened to the gear. The shoes were forced outward by a sleeve nd toggle link and were operated by a lever at the platform.

One eccentric was required to operate the engine in either for-ard or backward motion. The eccentric was rigidly attached to e crank shaft by set screws.

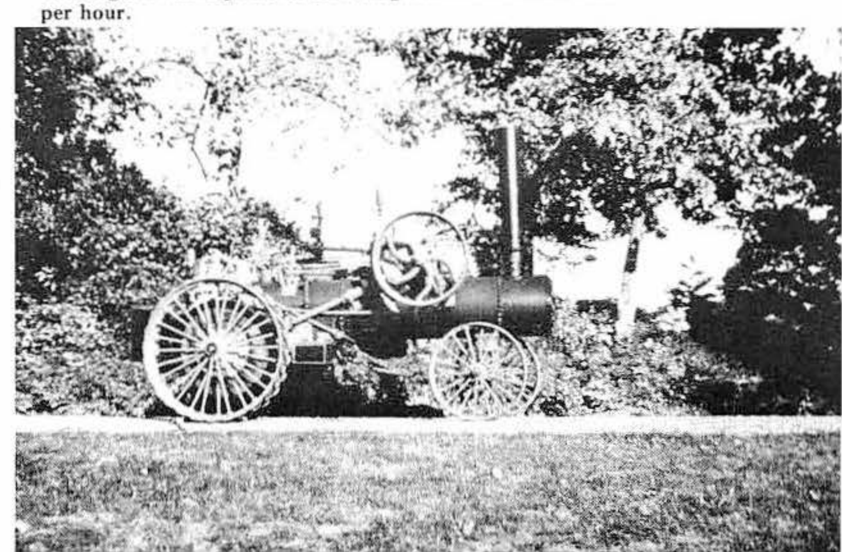


This 8 H.P. Aultman-Taylor was built in 1905 by Aultman-Taylor Machinery Co. of Mansfield, Ohio. This engine is a bevel gear compensating type. It transmitted power from the crank-shaft to the compensating gear by means of a shaft. Power transmission by means of this device was simple and direct.

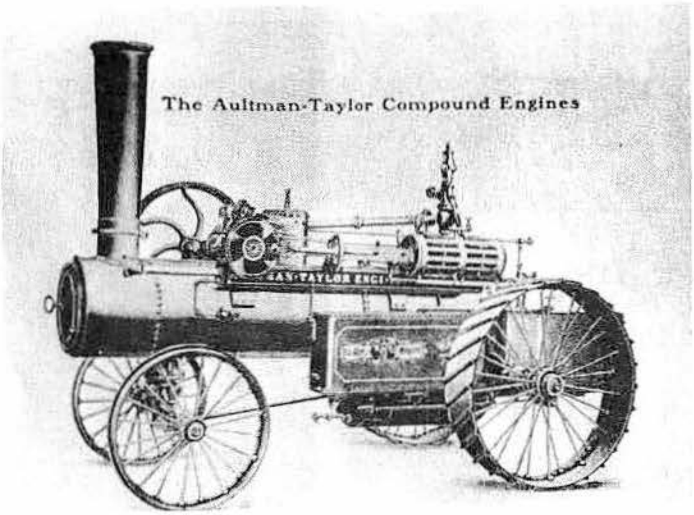


Aultman-Taylor showed this Columbia straw burner steam traction engine in a 1902 catalog. This engine used the sun flower or side shaft drive. It was built in Mansfield, Ohio.

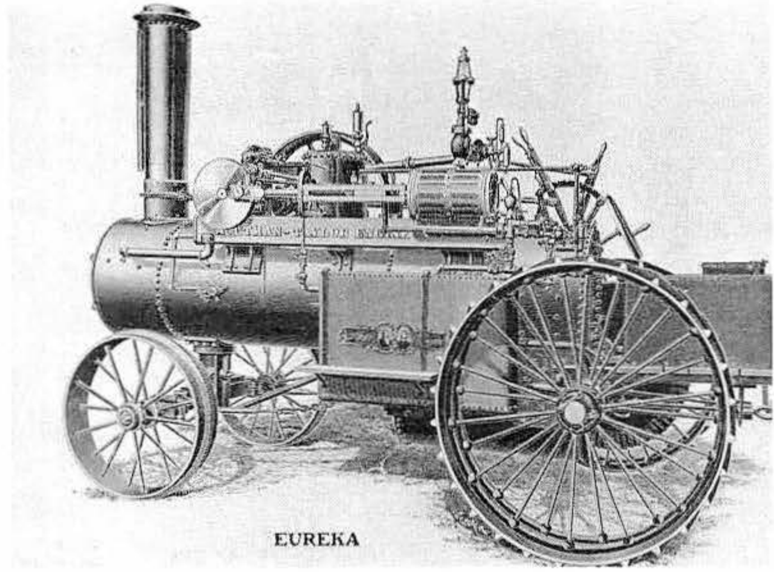
A 10 H.P. Aultman-Taylor engine, built in 1902, owned by William Hall of Burtonsville, Md. The engine is a bevel gear drive, Engine #6396. Aultman-Taylor used black for the boiler, dome, and smokestack, green for the steering wheel and levers, and the bevel gear & pinion. The ground wheels were green with stripping usually in white, but also in red, depending on the year the engine was built. Green was used for both boxes on the platform, with a picture of a starved rooster on the back side of each box, blocked in with yellow. The connecting rod and steam chest were stripped in yellow, the flywheel was green stripped in yellow or red, and green was used for the shaft of the right side of the engine and for the spindle between the front ground wheels. In 1907 Aultman-Taylor built an experimental steam traction engine designed by G. W. Seamsn, a draughtsman in the local office. It was a double cylinder engine - each of the cylinders being 10 inches by 16 inches. The drive wheels were seven and one half feet in diameter, with a face of forty-two inches. The maximum indicated horse-power was 171, while the horse-power at which it was expected to run continuously and economically was 120. The engine had a carrying capacity of 800 gallons of water and 1,500 pounds of coal. It was fitted with a new patent steam power steering device by which a turn of the wheel to the right or the left would turn the engine. The boiler was forty-two inches in diameter, the height of the engine was about fifteen feet. The engine was capable of traveling at a rate of 2.4 miles per hour.



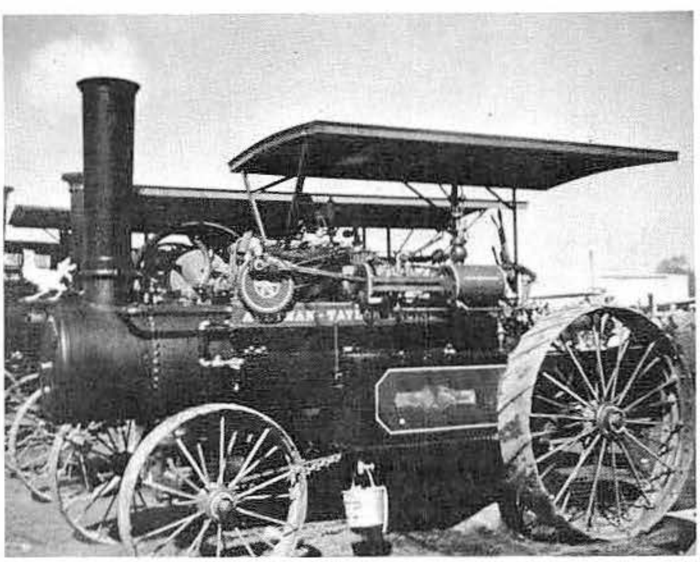
Aultman - Taylor



A 10 H.P. Aultman-Taylor compound steam traction engine. Cornelius Aultman established the C. Aultman Co. in 1851, then he established the Aultman-Taylor Machinery Co. The Aultman-Taylor Machinery Co. stopped producing steam traction engines about 1924. They built about 5,870 such engines.

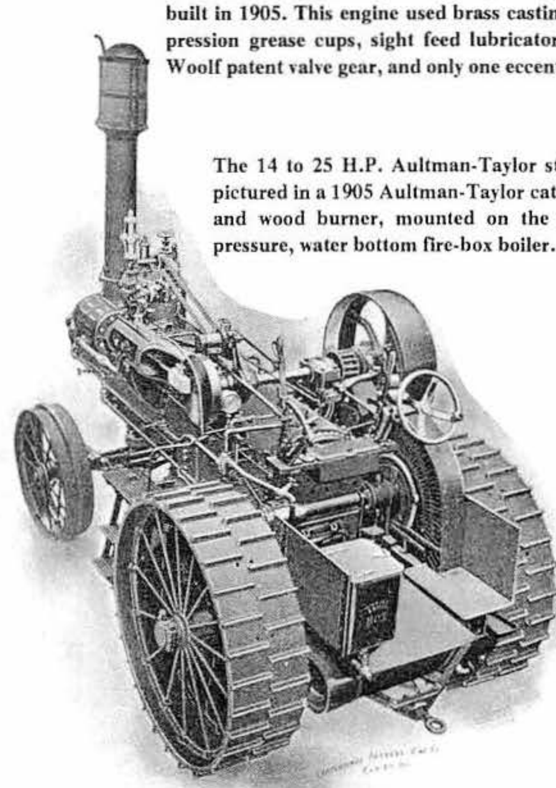


A 12 H.P. Aultman-Taylor bevel gear steam traction engine, built in 1905. This engine used brass casting and fittings, compression grease cups, sight feed lubricators, crosshead pump, Woolf patent valve gear, and only one eccentric.

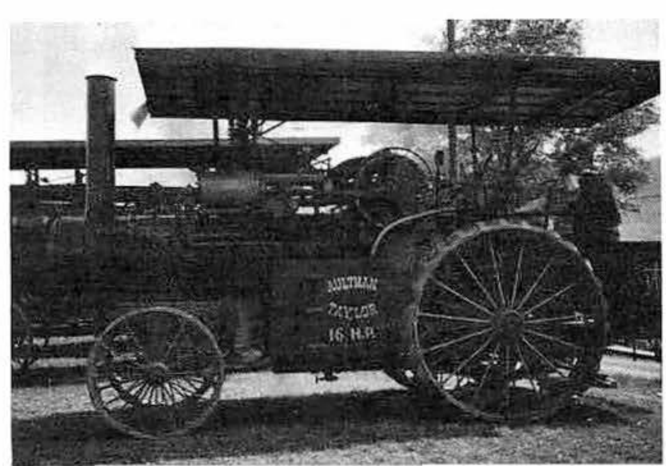


This 12 H.P. Aultman-Taylor steam traction engine, built in 1900, is owned by Marcus Lamoreaux of Waterville, Kan. It appears at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa, and was also at the Midwest Old Settlers and Threshers Reunion. The 1905 bevel gear drive is a rare engine, and is the first one of its type to be exhibited at the Midwest show. Lamoreaux acquired the engine from the Ben Markley estate in the fall of 1971. Markley had found it in Kansas about 1939. Its weight is 4,500 lbs. and it was built about 1900. This type of engine is known as a sunflower gear or inclined shaft type. With this engine there is no clutch, rather, a small gear slides on the crank shaft that is moved by a lever from the rear in and out of the large sunflower bevel gear on the top end of the inclined shaft. On the bottom of the inclined shaft is a small bevel gear that engages the large differential gear on the axle on the right rear of the fire-box.

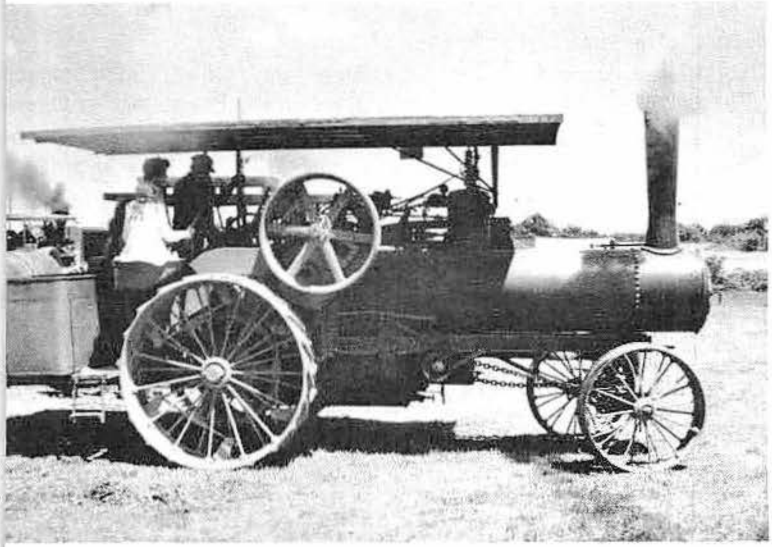
The 14 to 25 H.P. Aultman-Taylor steam traction engine pictured in a 1905 Aultman-Taylor catalog. This engine is a c and wood burner, mounted on the celebrated A & T h pressure, water bottom fire-box boiler.



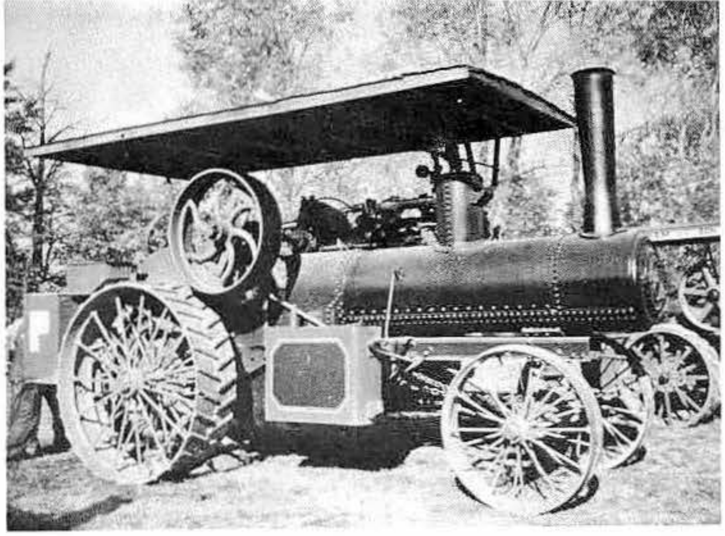
This 16 H.P. Aultman-Taylor steam traction engine, built in 1922, is owned by H. Lester Lee of Cross Creek, Pa. It is shown at the Tri-State Historical Steam Engine Assn. show at Hookstown, Pa. The Aultman-Taylor Machinery Co. was bought by Allis-Chalmers. Today the home office of Allis-Chalmers is Milwaukee, Wis.



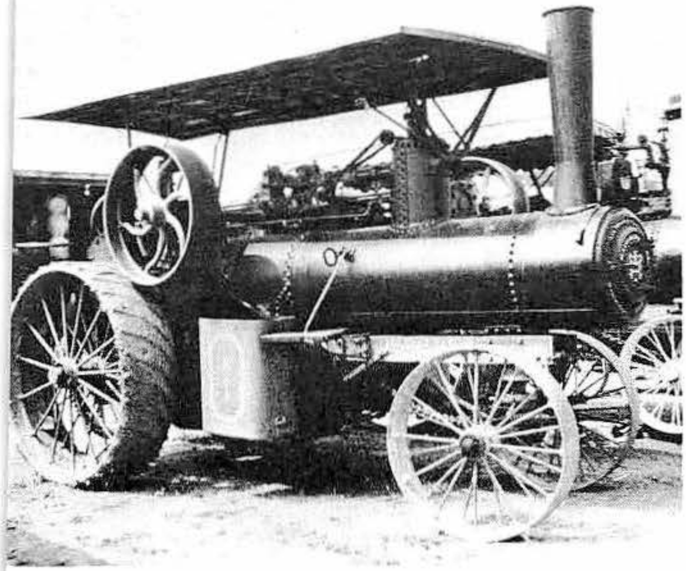
Aultman - Taylor



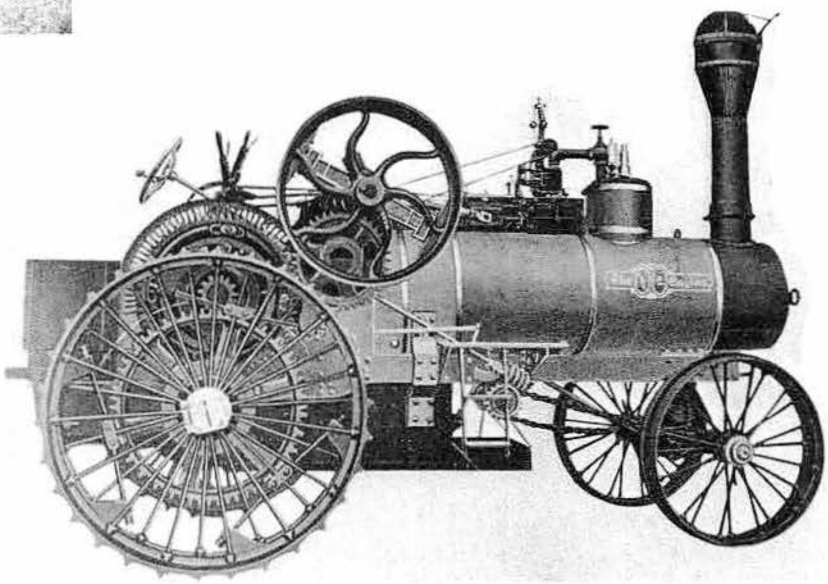
This 18 H.P., Aultman-Taylor steam traction engine, built in 1914, is owned by Jim Malz of Richmond Center, Ohio. It is at the Pioneer Steam and Gas Engine Society show, Meadville, Pa. The Aultman-Taylor engine boilers were of the high pressure type—safe for a working pressure of 150 lbs. They were tested under pressures of 200 lbs. hydrostatic and 150 lbs. steam.



This 20 H.P. Aultman-Taylor steam traction engine, built in 1918, is owned by George Rickey of Norwich, Ohio. It is seen at the Stumptown Steam Threshers Assn. show, New Athens, Ohio.

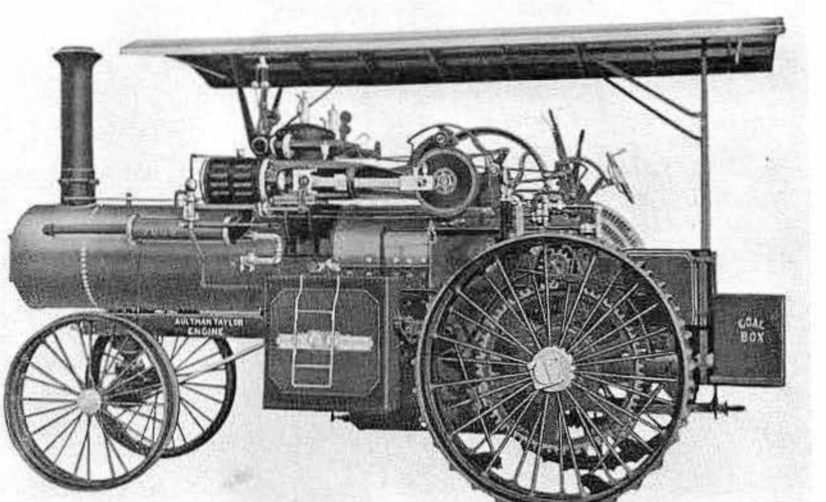


This 20 H.P. Aultman-Taylor steam traction engine, built in 1912, is owned by Tom Ackerman of Waretown, N. J. It appears at the Williams Grove Historical Steam Engine Assn. show, Mechanicsburg, Pa. Tom Ackerman's engine has a bore and stroke of 9 x 11 inches, and is built to carry 130 lbs. boiler pressure. This engine was built during the winter of 1911-12, and was bought for about $2,500 when new. Its Serial is #8306.



The 25 H.P. Aultman-Taylor steam traction engine, straw burner, was pictured in a 1909 Aultman-Taylor Co. catalog. This engine is a spur gear traction mounted on the John Abell patent boiler. This boiler had double riveted seams, was heavy stayed, and made to stand a much higher pressure than would ever be needed. The fire-box had a drop crown sheet which allowed the flues to extend into half the length of the fire-box. This form of construction gave a large heating surface. A hollow corrugated fire bridge extended back from the drop crown sheet forming a combustion chamber in the fire-box. All the straw burners were lagged with matched pine and then covered with planished steel.

This 25 H.P. Aultman-Taylor steam traction engine, built in 1909, is a coal burner. It used the Saxon patent cushion gear. Aultman-Taylor built these engines from 14 H.P. up to 25 H.P. The Aultman-Taylor was a good plowing engine because it was rear mounted and there was no danger of it rising in front. Rear mounting enabled the tender to be placed on the rear platform and the tanks on the side, thus affording very liberal water capacity. Rear mounting brought the crankshaft nearer to the countershaft thus avoiding severe strains on the boiler shaft. The flywheel and crankshaft were close to the operator and easy to get at.



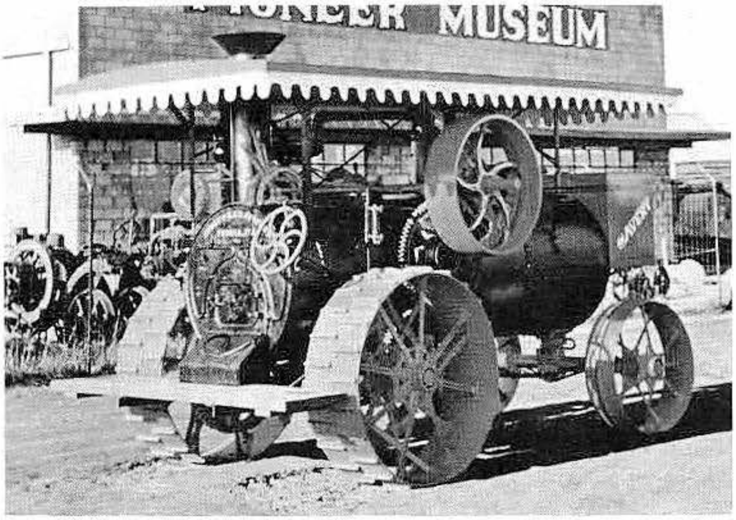
Avery Co.

The idea responsible for founding the Avery enterprises had its conception in the infamous Andersonville Confederate Prison when a Union soldier spent his time sketching a design for a corn planter. That soldier was R. H. Avery. At the close of the Civil War, Avery returned to his farm in Kansas and by 1874 had a full size working model of his planter completed. In 1877 Avery and his brother established a manufacturing business in Galesburg, Ill., to manufacture planters, stalk cutters and cultivators.

Success came quickly, and as the business grew, the Avery brothers determined to move the plant to Peoria to take advantage of better transportation facilities. They purchased 10 acres of land east of the intersection of North Adams and North Jefferson streets and erected a square building in 1884.

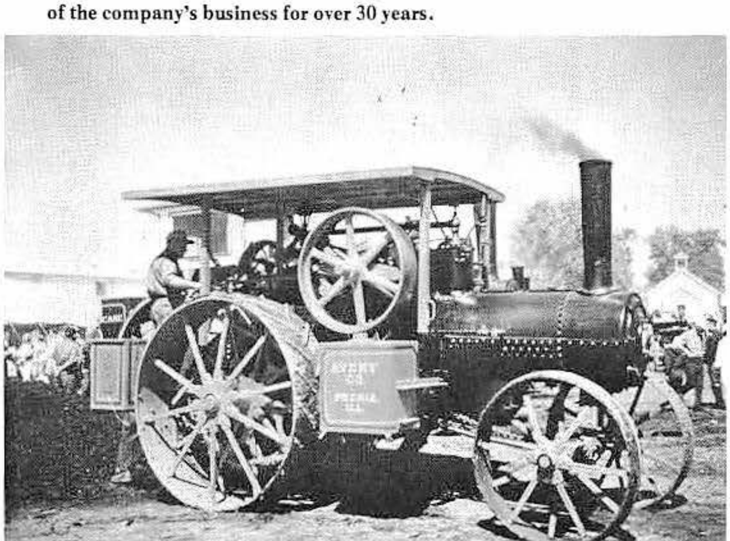
In 1891, the company began manufacturing steam traction engines and grain threshers, which became a major part of the company's business for over 30 years. They also made a gasoline powered truck in the 1900s.

The Avery was a single cylinder, straight flue steam traction engine. Avery boilers were reinforced for carrying high pressures.



A 16 H.P. Avery & Rausch return flue built in 1903 by the Avery Power Machinery Co. of Peoria, Ill. This engine is owned by the Reynold's Museum of Wetaskwin, Alberta, Canada. The picture was supplied by S. G. Reynolds, Museum Manager.

This 16 H.P. Avery top mounted, built in 1916, is owned by Sater & Prickett of Mount Pleasant, Iowa. This engine is at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant. In 1891, the Avery Co. began manufacturing steam traction engines and grain threshers, which became a major part of the company's business for over 30 years.



The Avery curved block reverse gear gave equal lead and cut off to get the most fuel wconomy.

The Avery friction clutch had long, heavy shoes, which covered about one-half the circle of the flywheel and held fast when the clutch was thrown in. The shoes pushed straight out against the rim and thus brought no end thrust on the main shaft to quickly wear the engine out of line, as was the case of some which engage from the side on a beveled surface. When the clutch was thrown out, the shoes were drawn well back from the wheel.

All the Avery engines were regularly equipped with automatic self coupling draw bars. All the gears were steel and semi-steel.

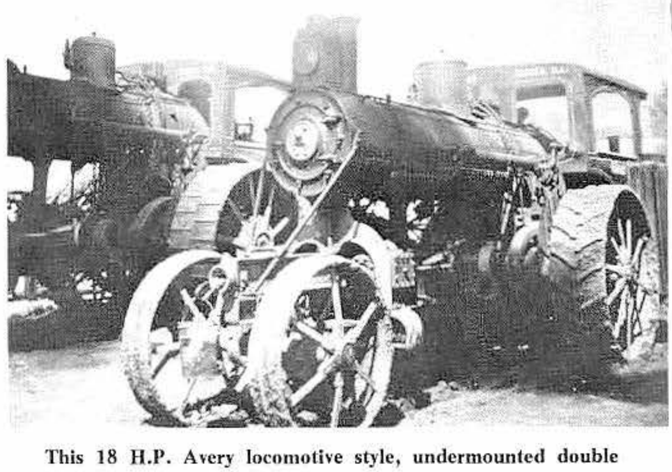
A progressive company, Avery had introduced a mechanical corn picker in 1894, but it was so different and unusual that old time farmers wouldn't buy it because it would put too many men out of work.

The Avery Company was incorporated in September 1907.

From the "Largest Tractor Company in the World" to bankruptcy came suddenly, and in early 1924 the company went into receivership. Several reasons have been advanced for the bankruptcy, but careful study would probably reveal that a combination of reasons brought about the demise, prominent among which would be poor inventory policies and over extension of credit to customers.

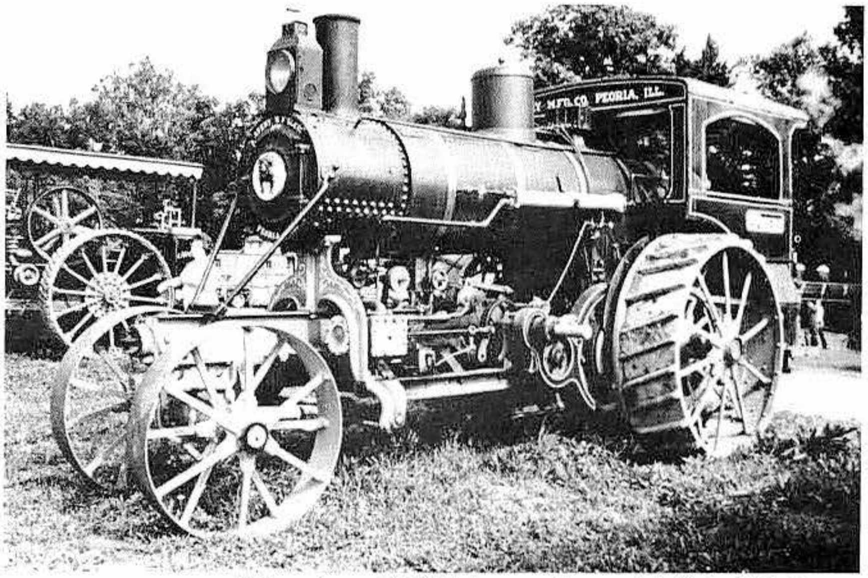
Whatever the causes, despite several attempts to revive the company after 1924, the bankruptcy ended the Avery Company as a major industry. But, while it flourished, it was Peoria's largest industry and it left much behind. The north end of Peoria during this period was known as Averyville and several churches in the area still prefix their names with Averyville. The Old Avery homestead in Peoria, although much altered in recent years, still remains in a triangle of land bordered by Adams, Van Buren and Jefferson Streets.

One attempt to revive the company nearly succeeded. The company made money until 1931. But the depression, plus heavy indebtedness incurred in the initial founding of this second organization, brought it also to bankruptcy. A second attempt to revive it was never able to gain much momentum, but the company was still operating on a small scale in 1941.



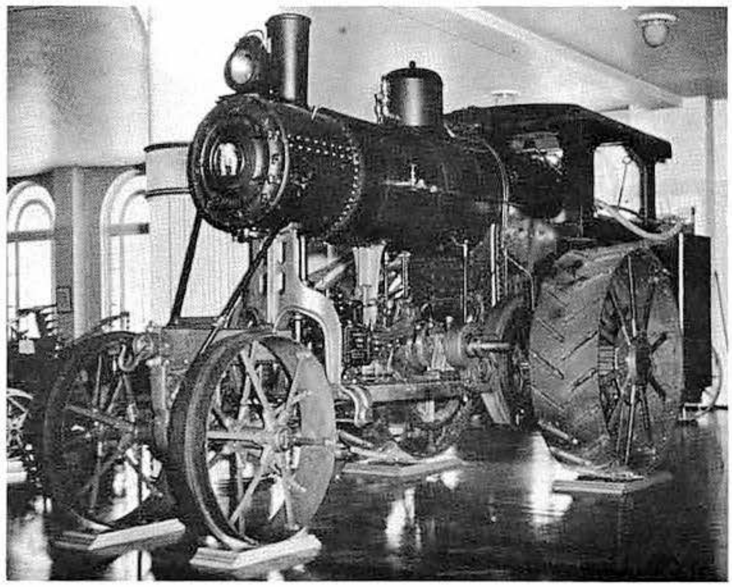
This 18 H.P. Avery locomotive style, undermounted double cylinder steam traction engine built in 1912, is owned by C. R. Willits & Son of Mount Pleasant, Iowa. It is in action at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant.

Avery Co.

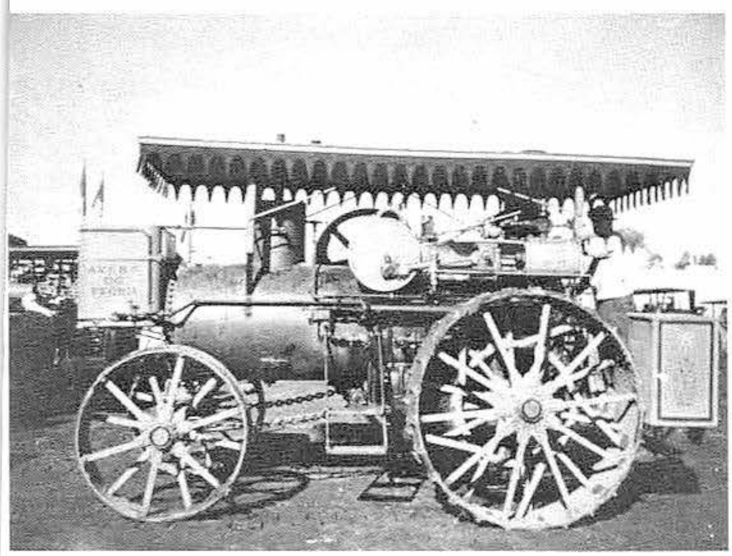


This engine, a 18 H.P. Avery undermount built in 1911, is owned by Herber L. Conley of Etters, Pa. It is at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa. The Avery engine always put one in mind of a railroad engine that has wandered away from its tracks. The Avery Co. was incorporated in September 1907.

A 18 H.P. Avery locomotive style, undermounted double cylinder steam traction engine built in 1911. This engine is owned by Rough and Tumble Engineers Historical Assn. of Kinzer, Pa.



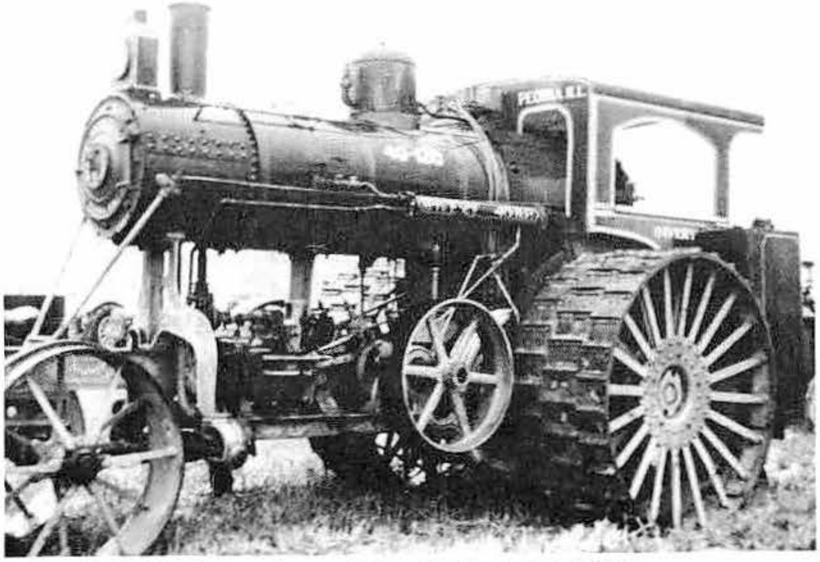
This 30 H.P. Avery locomotive style, undermounted double cylinder steam traction engine, built in 1916, is on display at Greenfield Village and the Henry Ford Museum, Dearborn, Mich.



This 20 H.P. Avery return flue, built in 1913, is owned by Bill Sater of Mount Pleasant, Iowa. It is at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant. The short return flue boiler was liked by some people for its higher efficiency, the result of passing the combustion gasses through the boiler twice.

This 40 H.P. Avery undermount steam traction engine, built in 1914, is owned by C. R. Willits & Son of Mount Pleasant, Iowa. It is at the Midwest Old Settlers & Threshers Assn. show, Mount Pleasant. C. R. Willit's Avery weighs 25 tons. It is a double simple with springer valve gear and 7 x 10 inch cylinders. Its two gears give it 1¾ and 2½ MPH speeds at 250 RPM. C. R. Willits brought the engine from Oklahoma, where it was used to run a sawmill.

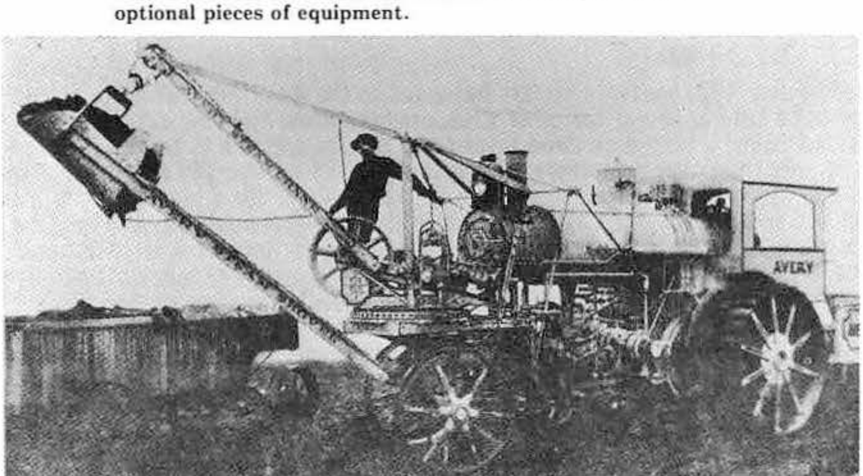
Avery Co.

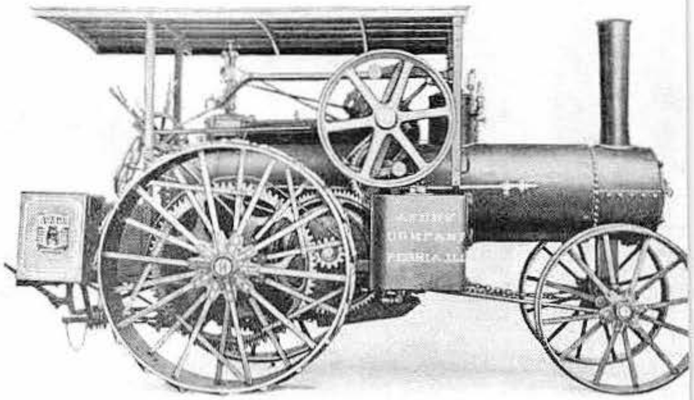


This 40 H.P. Avery undermount steam traction engine, built in 1912, was owned by Earl Marhanka of Dowagiac, Michigan. It has full extension wheels. This engine was sold for $14,500 in May, 1973.

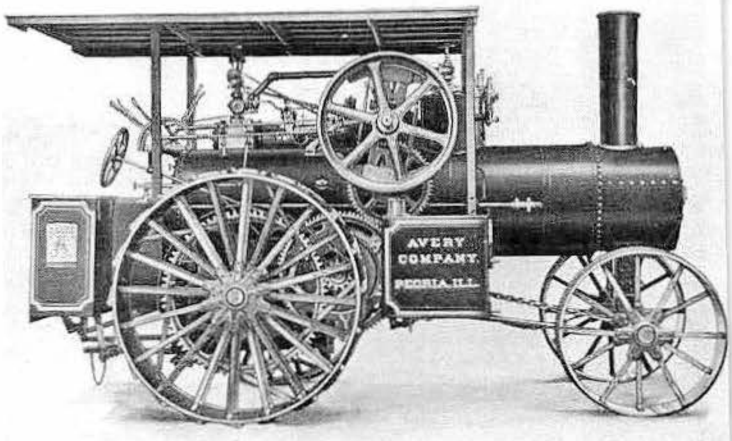
Somewhere before 1907 Avery began to move into the gasoline tractor business, and by 1907 the company was producing this rather strange vehicle. Although it looked like a truck, Avery refused to call it such, naming it instead the "Farm & City Tractor." The company claimed that it could pull three or four 14-inch plows, pull a drag or scraper, and could be fitted with a cargo bed for carrying loads. Both driver and passenger sat abreast of the engine box. Avery apparently did not feel that fenders, lights, or driver protection were necessary on this "tractor."

Employed as a construction steam shovel is this 18 H.P. Avery locomotive style, undermounted double cylinder steam traction engine. This engine is using the Avery Steam crane attachment plus the Avery steam shovel attachment, both of which were dealer or factory installed optional pieces of equipment.



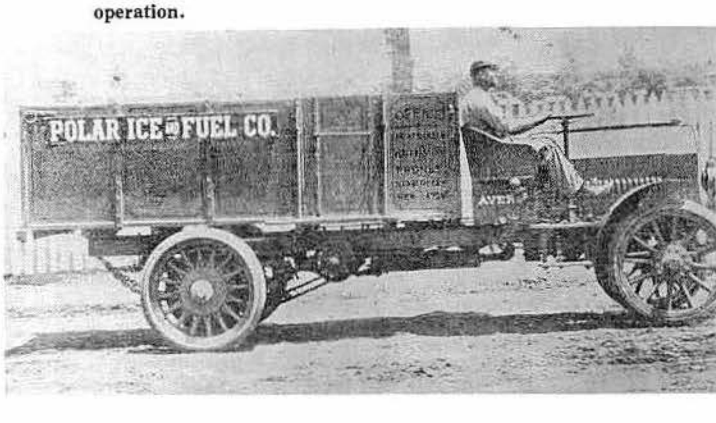


A 40 H.P. Avery undermounted double cylinder steam traction engine built in 1917. These engines used the Avery curved block reverse gear which gave equal lead and cut off. The Avery boilers were reinforced for carrying high pressures. The Avery friction clutch had long, heavy shoes, which covered about one-half the circle of the flywheel and held fast when the clutch was thrown in.



A 50 H.P. Avery single cylinder straight flue steam traction engine built in 1918. Regular equipment on all Avery steam engines included rocker grates, automatic fire door, automatic coupler, lifting jack, and tools. All the gears were steel or semi-steel.

During the five year span between 1907 and 1912, Avery finally concluded that its "Farm & City Tractor" was really a truck and should be marketed as such. Still, even though the company now called its vehicle a truck, its promotional material continued to stress the point that it could pull four 14-inch plows, a gang of harrows, or other agricultural implements. It appears that very few mechanical or design changes were made in the vehicle between 1907 and 1912, when this Avery went to work for the Polar Ice & Fuel Co. of Indianapolis. In a later testimonial, Polar officials commended the truck for its efficient and economical operation.



A. D. Baker Co.

Abner D. Baker, son of Samuel and Lydia Baker, was born larch 17, 1861, near Fredericktown, Knox County, Ohio. When 5 years of age he moved with his parents to a farm a few miles ıst of Swanton, Ohio.

He had a common school education. When he was 23 years old, e went to Akron, Ohio. There he worked as a machinist in the mpire Reaper Works for about three years. From there he went) Erie, Penn., and worked one year in the Erie City Iron Works. rom there he went to Detroit, where he worked in the Frontier on Works for about three months.

At this time he returned to Lucas County and started a repair ıop on his father's farm. He conducted a prosperous business ıere for a few years and in 1895 he opened a similar shop in wanton.

He conducted the Swanton business as a repair shop until 901, when it was incorporated under the name of the A. D. aker Co., to engage in the manufacture of steam traction ngines. Mr. Baker had already built five traction engines as a ersonal business enterprise before he organized the stock company.

In April 1886, Mr. Baker married Ella Berkebile, and in 1891 a on, Louis R. Baker was born. He later became the mechanical ngineer of the company.

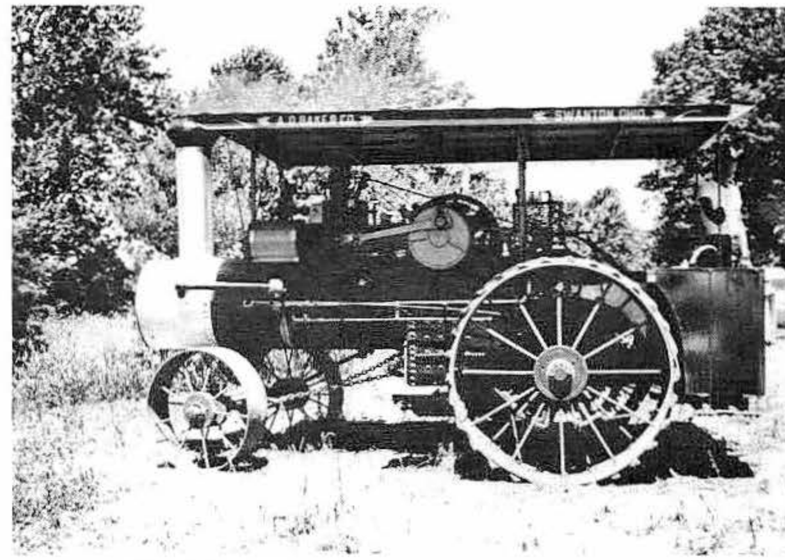
The Baker steam traction engines used the Baker center-hung everse valve gear, Baker balance valve and seat, adjustable boxes or rear axles, and the Baker Uniflow Cylinder.

The Baker boiler was adopted to the A.S.M.E. type of boiler as tandard, and all boilers produced conformed to the A.S.M.E. ode. Each boiler was given a rigid A.S.M.E. inspection which, in tself, was ample proof of the quality of both material and workmanship. The boilers had a tensile strength of 55,000 pounds to he square inch.

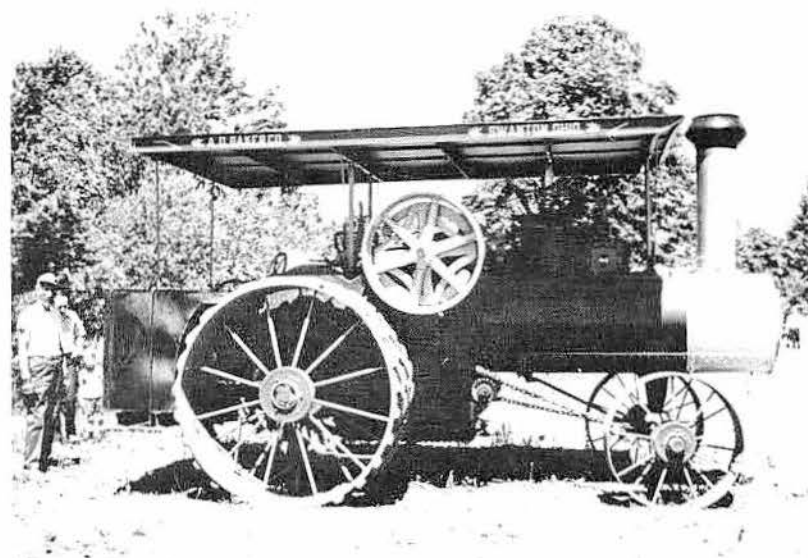
The crown-sheet was provided with fusible plug of soft metal, vhich would melt on exposure, preventing explosion or other lamage from over-heating on account of low water.

The fire-box was very large, having ample heating surface per ıorse-power. Bakers used less steam per rated horse-power than ıny other traction engine in the world, while the fire-box was ımong the largest made. However, the heating surface was in orrect proportion to the requirements of the engines.

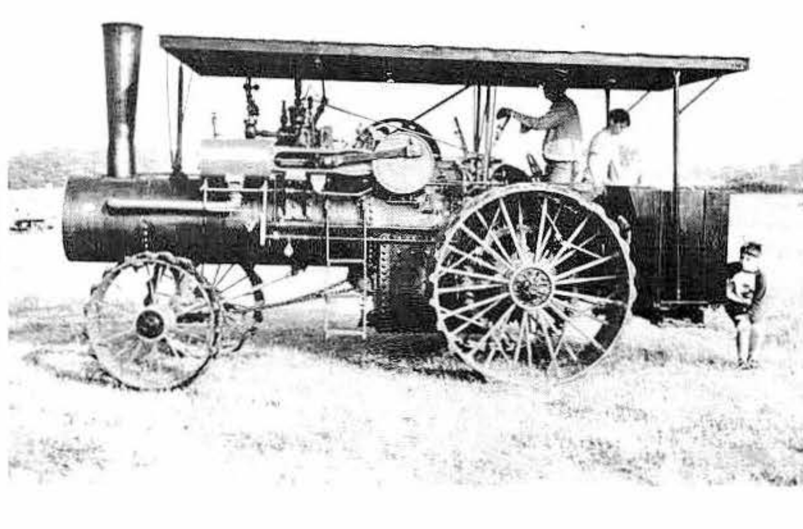
The company also made the famous Baker Valve Gear for ailroad locomotives. The Baker Valve Gear was used on railroad ocomotives worldwide. The Baker Co. also made steam road ollers and grain threshers.



This 18 H.P. Baker steam traction engine, built in 1913, is owned by Jay Bower of Allendale, Mich. It is at the River Bend Steam & Gas Assn. show at Allendale. The engine was built by A. D. Baker of Swanton, Ohio.

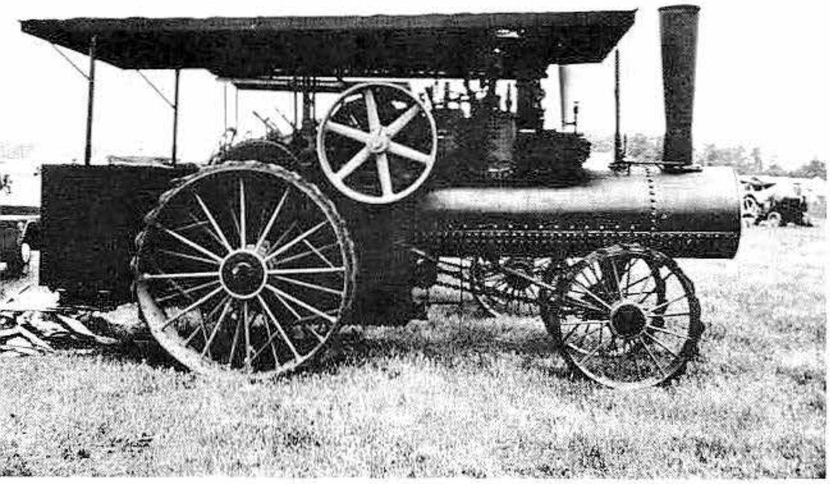


This is the flywheel side of the 18 H.P. Baker steam traction engine owned by Jay Bower of Allendale, Mich.

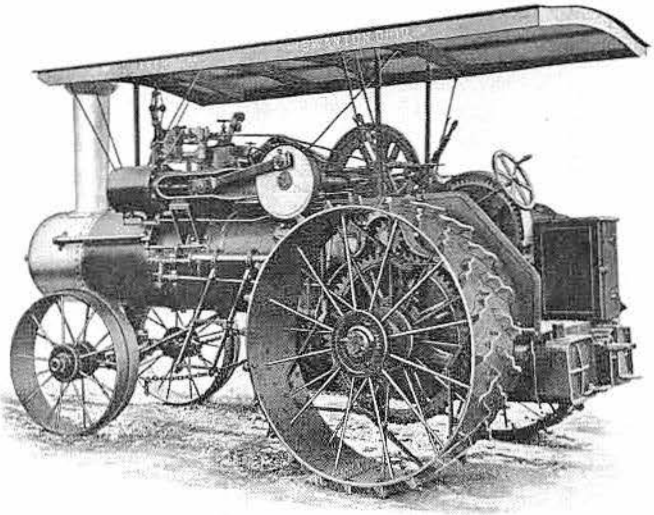


This 19 H.P. Baker steam traction engine, built in 1923, is owned by Larry Mix of Hastings, Mich. It is at the Michigan Steam Engine & Threshers show at Mason, Mich. The Baker boiler was adopted to the A.S.M.E. type of boiler, and all boilers produced conformed to the A.S.M.E. code. Each boiler was given a rigid A.S.M.E. inspection which, in itself, was ample proof of the quality of both material and workmanship. The steel used had a tensile strength of 55,000 pounds to the square inch.

A. D. Baker Co.

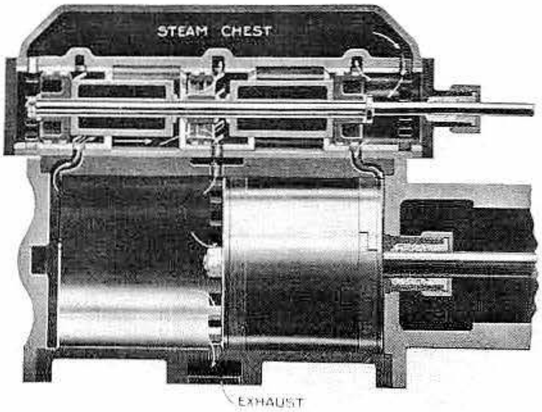


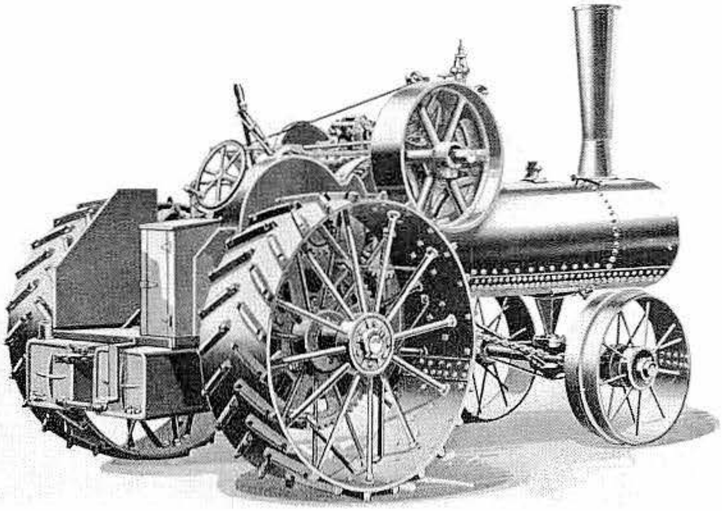
This is the flywheel side of the 19 H.P. Baker engine owned by Larry Mix of Hastings, Mich.



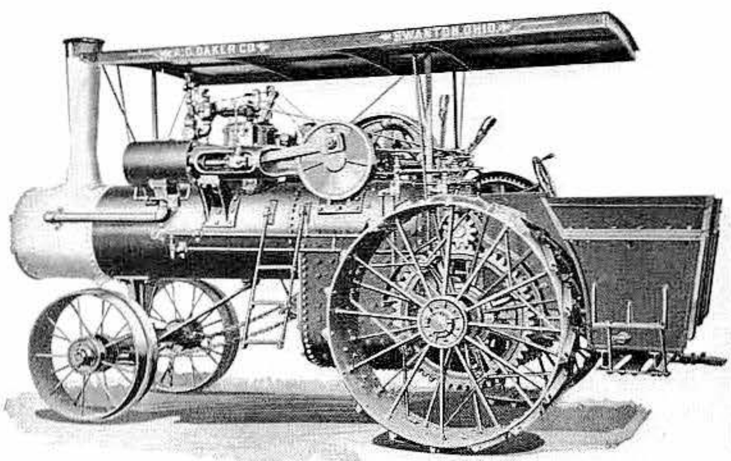
A 18 H.P. Baker steam traction engine, from a 1911 catalog. Each Baker steam engine had a crown-sheet fusible plug of soft metal, which would melt on exposure preventing explosion or other damage resulting from over-heating due to low water.

The Baker uniflow cylinder is one where the steam in the cylinder flows just in one direction as it passes through. Steam comes in a port at the end of the cylinder and follows the piston up to the end of the stroke where it is exhausted through ports around the cylinder wall, which are uncovered by the piston. A long piston, which is nearly one-half the length of the cylinder, is used so that release does not come until late in the stroke. When the piston covers the exhaust ports on the return stroke, compression would run very high by the time the piston reached the end of the stroke if special means were not provided to prevent it. Therefore, Baker used a piston valve which admitted steam at the outer end of the valve. This valve has a piston head on each end, with two rings on each head. It also has a center valve which controls steam release at the center port in the valve chamber. The exhaust edges or inner edges of the end valves have an 1/8-inch clearance when the valve is in center position. The center valve has a 5/16-inch lap in the same position. By this means, the compression in the cylinder escapes into the valve chamber up to the time that the inner edge of the end valve closes the port to exhaust steam.



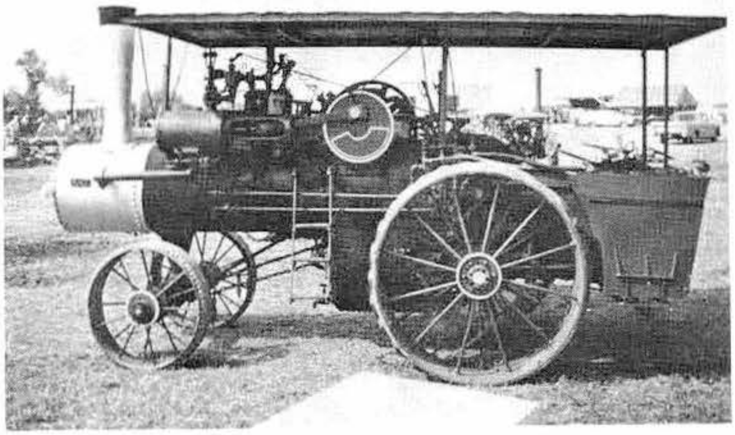


A 19 H.P. Baker, built by A. D. Baker Co. of Swanton, Ohio, is pictured in a 1929 catalog. Abner D. Baker was born March 17, 1861 near Fredericktown, Ohio. When 15 years of age he moved with his parents to a farm a few miles east of Swanton, Ohio.

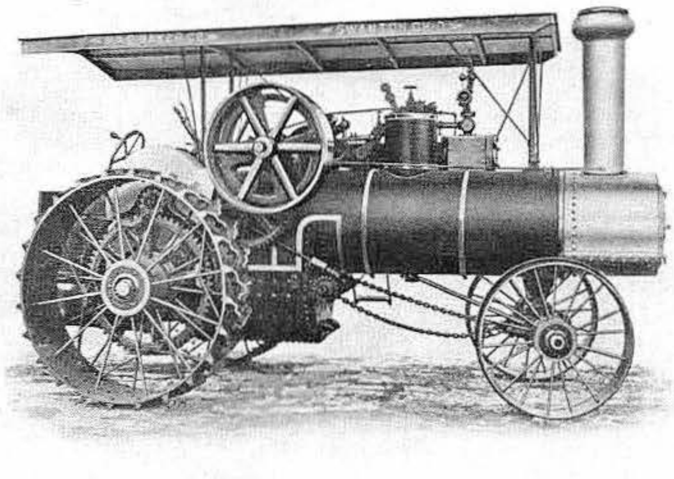


A 21-75 H.P. Baker steam traction engine pictured in a 1929 catalog. This engine's fire-box was very large, having ample heating surface per horse-power. It used less steam per rated horse-power than any other traction engine in the world, while the fire-box was among the largest made.

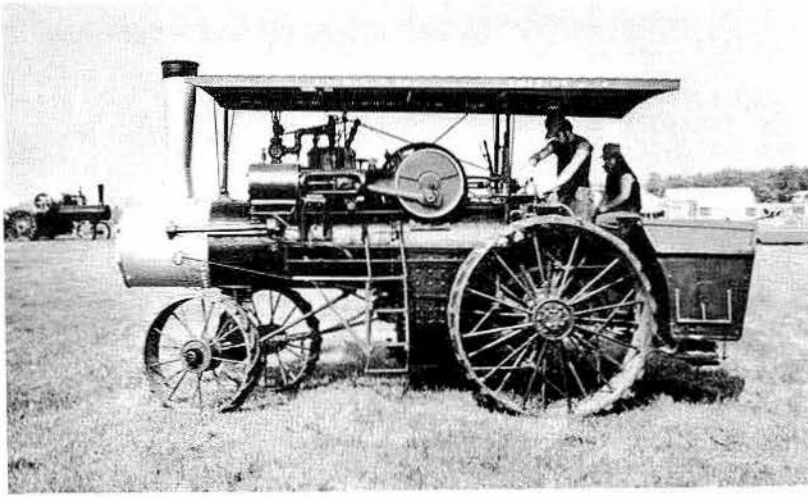
A. D. Baker Co.



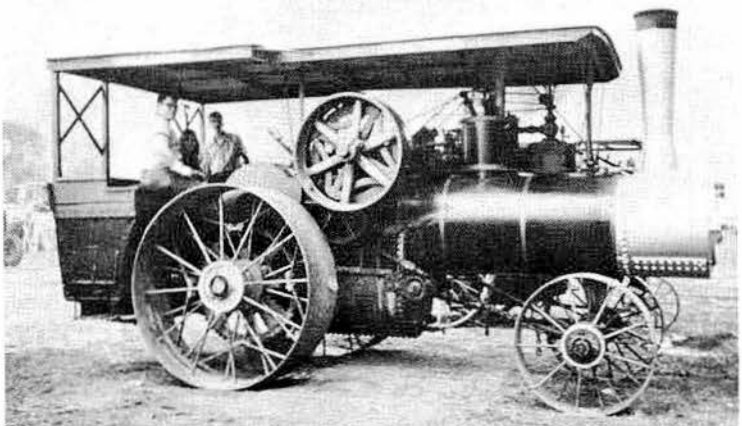
This 21-75 H.P. Baker steam traction engine, built in 1922, is owned by Glen Abaker of Newark, N.Y. This engine is at the New York Steam Engine Assn. show in Canadaigua, N.Y. The A. D. Baker Co. was established in 1888 by A. D. Baker and incorporated in December, 1900. A. D. Baker's first traction engine was rear-mounted, had a "Baker" valve gear and counterbalanced friction shoes. A. D. Baker moved to Swanton, Ohio, in 1876, and set up his first experimental shop there. Later, he built a larger machine ship on the Fulton-Lucas County line, where he manufactured small stationary engines.



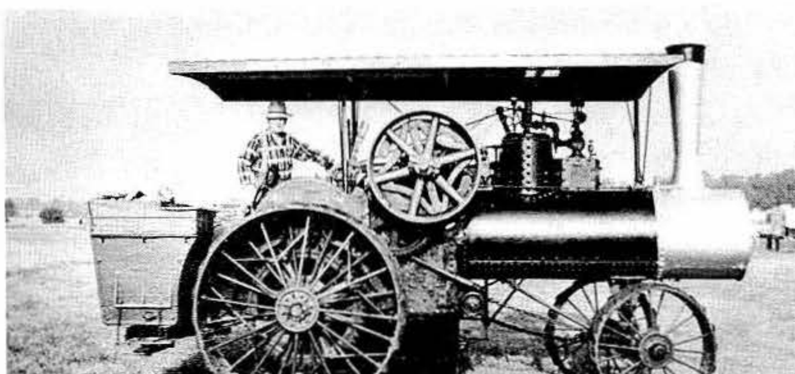
A 20 H.P. Baker steam traction engine pictured in a 1911 catalog. All Baker engines were regularly equipped with coal and wood grates, the bars having ¾-inch openings. For the fine-coal districts, the company supplied grate-bars having ½-inch openings. Straw-burning grates could be substituted.



This 21-75 H.P. Baker steam traction engine, built in 1925, is owned by B. Cappon of Woodland, Mich. It is in action at the Michigan Steam Engine & Threshers show at Mason, Mich.



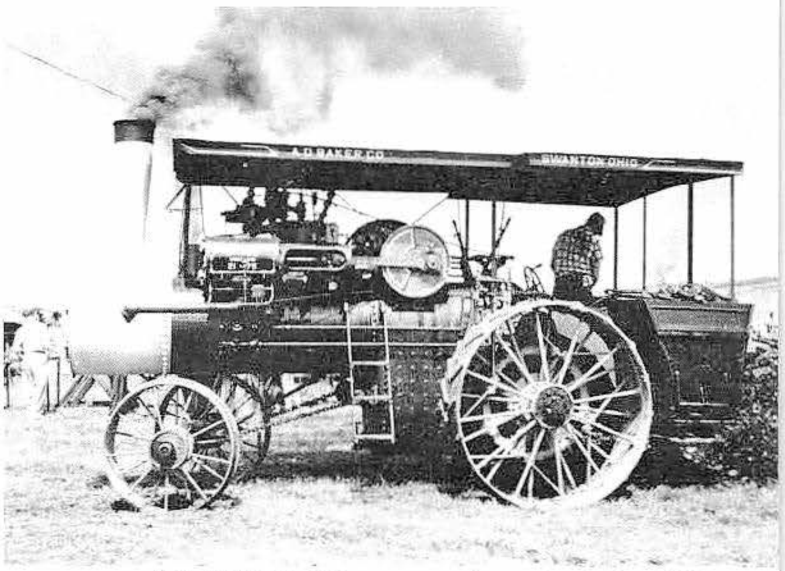
This 21-75 H.P. Baker steam traction engine, built in 1921, is owned by Hugh Hartzell of Union City, Ind. It is at the Darke County Steam Threshers show at Greenville, Ohio. Abner D. Baker's steam traction engines were sold all over the U.S. and in a few foreign countries.



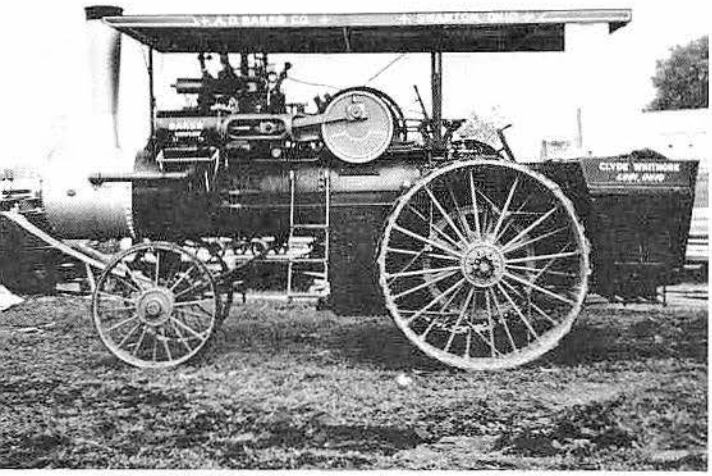
This is the flywheel side of the 21-75 H.P. Baker owned by B. Cappon of Woodland, Mich.

A. D. Baker Co.

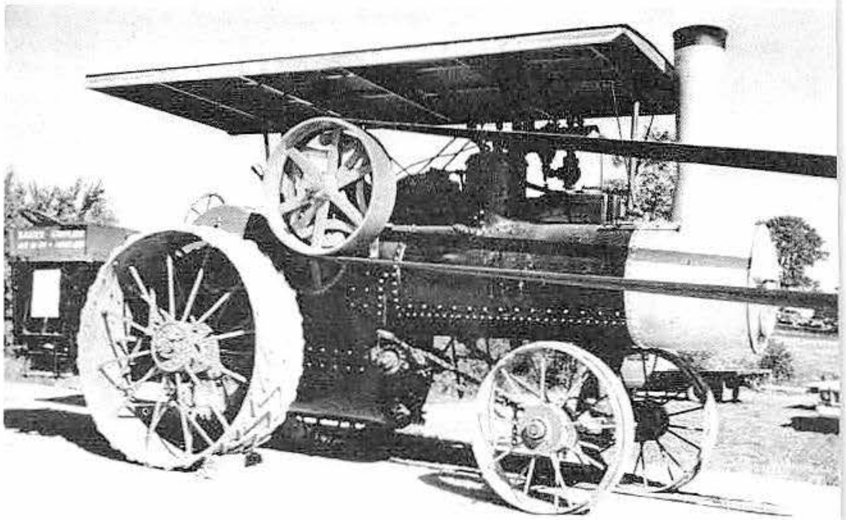
A team of horses and an A. D. Baker steam traction engine are both on the move. This picture was taken at the Northern Illinois Steam Power Club show at Sycamore, Ill.



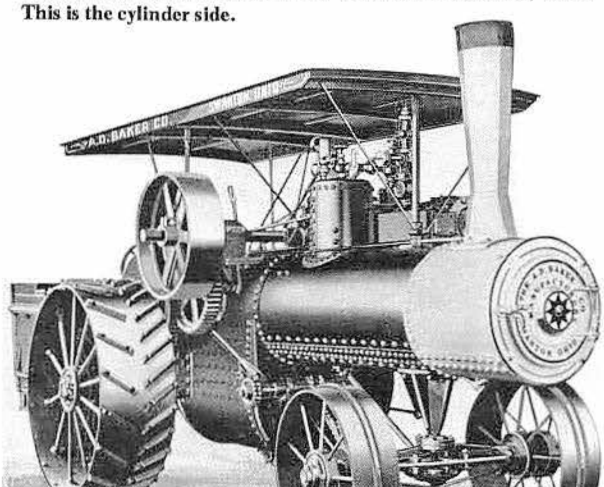
This 21-75 H.P. Baker steam traction engine, built in 1922, is owned by John McDowell of Plainfield, Ohio. It is at the Stumptown Steam Threshers Assn. show in New Athens, Ohio.



This 21-75 H.P. Baker steam traction engine, built in 1925, is owned by Clyde Whitmore of Lodi, Ohio. It is in action at the Tuscarawas Valley Pioneer Power Assn. show at Dover, Ohio. This is the cylinder side.

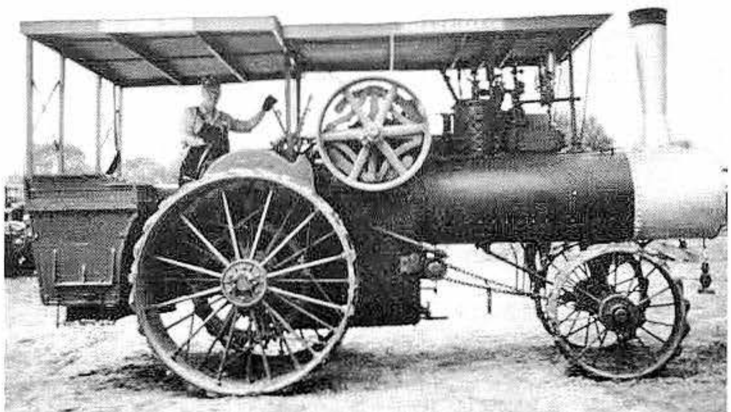


This is the flywheel side of the 21-75 H.P. Baker owned by Clyde Whitmore of Lodi, Ohio. It is appearing here at the Richland County Steam Threshers Assn. or show at Mansfield, Ohio.

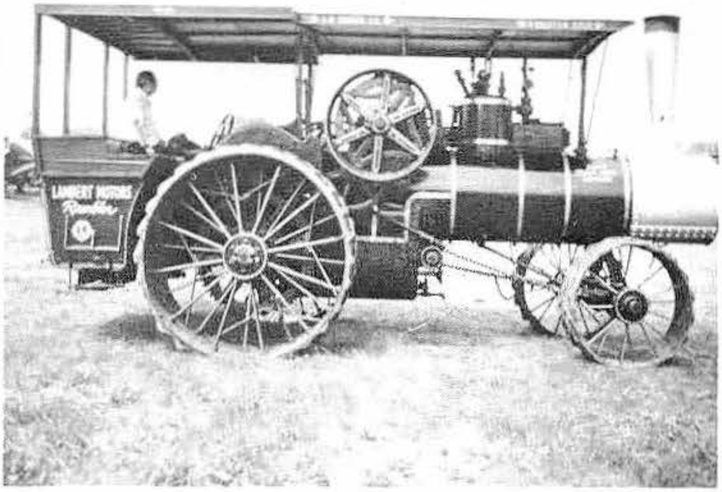


A 23-90 H.P. Baker steam traction engine, pictured in a 1929 catalog. The Baker steam traction engine used the Baker center-hung valve gear, Baker balance valve and seat, adjustable boxes for the rear axles, and the Baker uniflow cylinder.

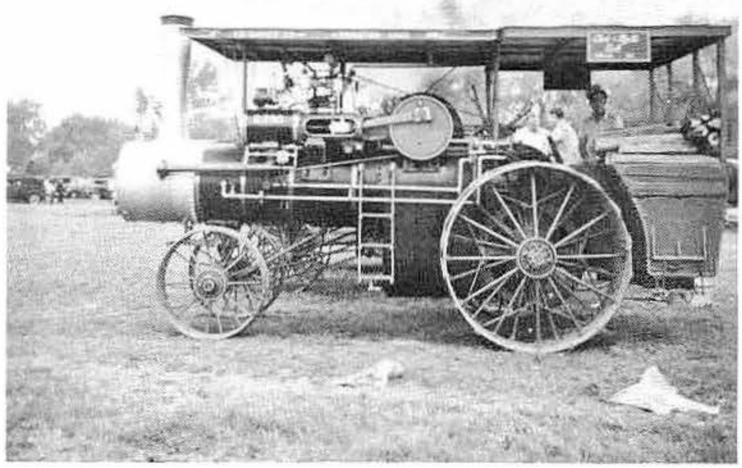
This 23-90 H.P. Baker steam traction engine, built in 1923, is owned by Ralph Baltes of Greenville, Ohio. It is at the Darke County Steam Threshers show at Greenville, Ohio. The Baker Valve gear was used on U.S. and foreign railroad locomotives.



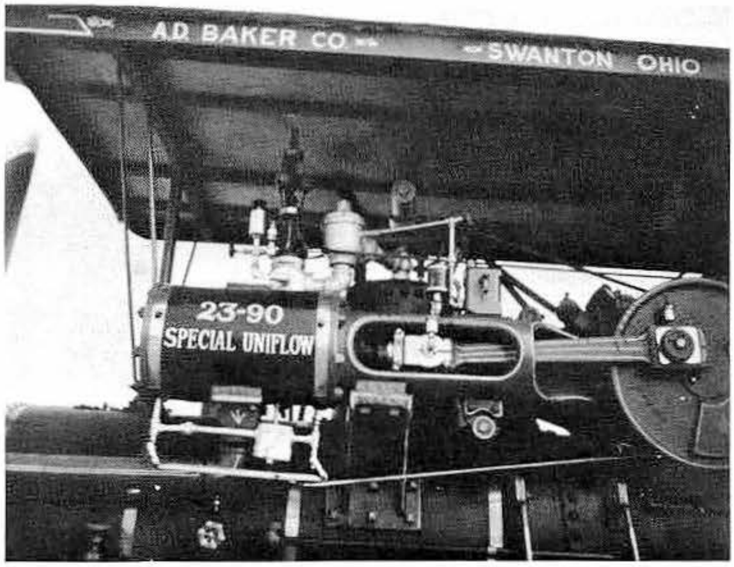
A. D. Baker Co.



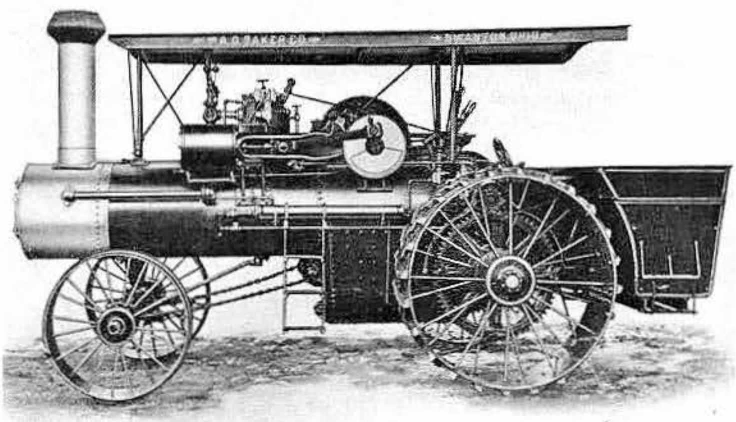
This 23-90 H.P. Baker steam traction engine, built in 1926, is owned by Walter Lambert of Troy, Ohio. It is at the Dark County Steam Threshers show, Greenville, Ohio.



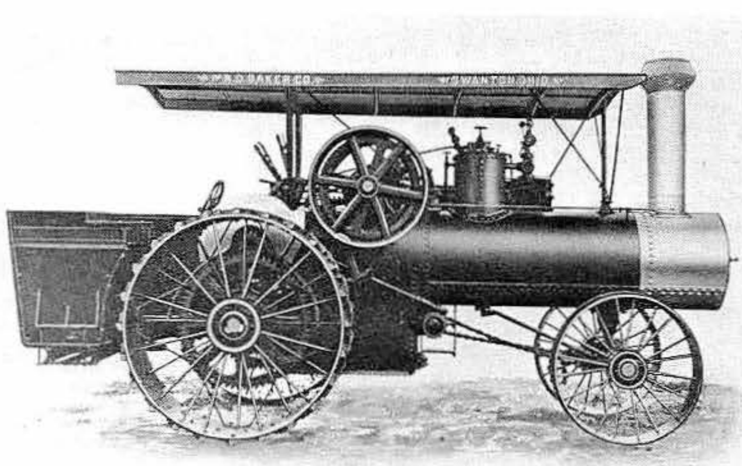
This 23-90 H.P. Baker steam traction engine, built in 1927, is owned by Clark Dell of Ontterville, Ontario. It appears at the Ontario Steam and Antique Preservers show in Milton, Ontario.



The Baker uniflow cylinder was used on the 23-90 H.P. engine owned by Clark Dell of Ontterville, Ontario.

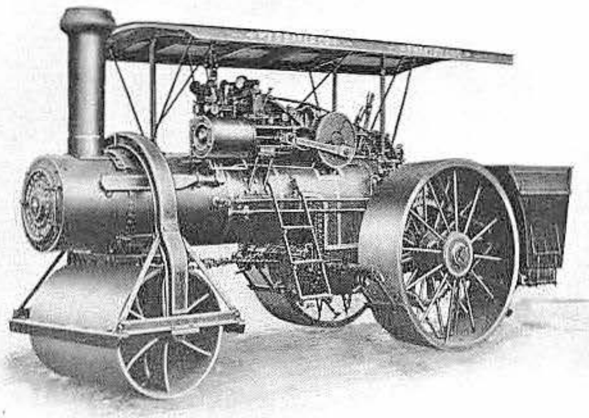


The 25 H.P. Baker steam traction engine, pictured in a 1911 A. D. Baker catalog, was sold under positive warranties. The cylinder of this engine was surrounded by a jacket of live steam at boiler temperature and boiler pressure, overcoming condensation in the cylinder and allowing all of the natural expansion of the steam after cut-off took place.

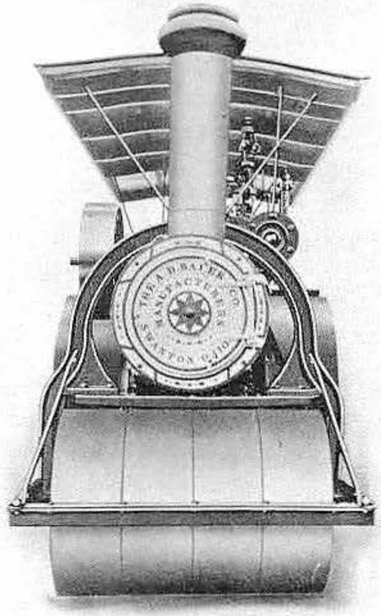


A 25 H.P. Baker steam traction engine was pictured in a 1911 A. D. Baker Co. catalog. This engine used a jacket and had extra water tank capacity.

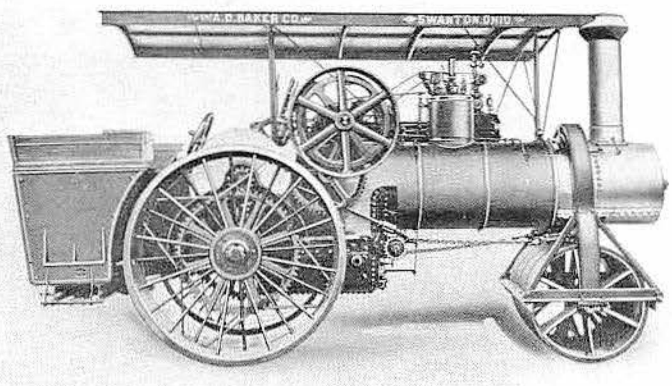
A. D. Baker Co.



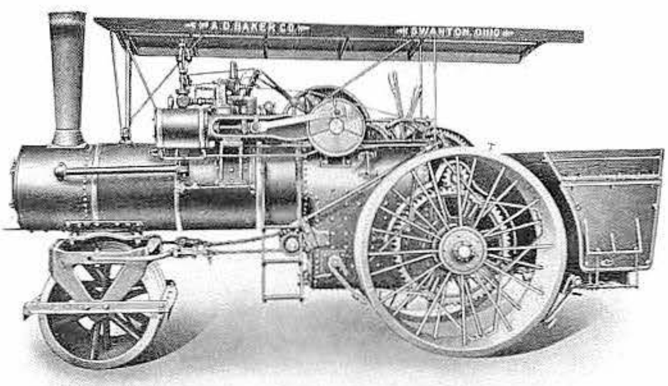
The 18-H.P. Baker steam road roller, from a 1911 catalog. This Baker was a 10-ton roller, also built to haul heavy loads such as graders, scarifiers, and plows, or to be used as belt power to run large capacity rock crushers and saw mills. Rollers built in the 1920s were equipped with both hand or power friction steering devices, conveniently located so as to be reached by the operator from either side of the roller. The compensating gear permitted turning at all times in either direction at any speed from a mile or less to 2½ miles per hour.



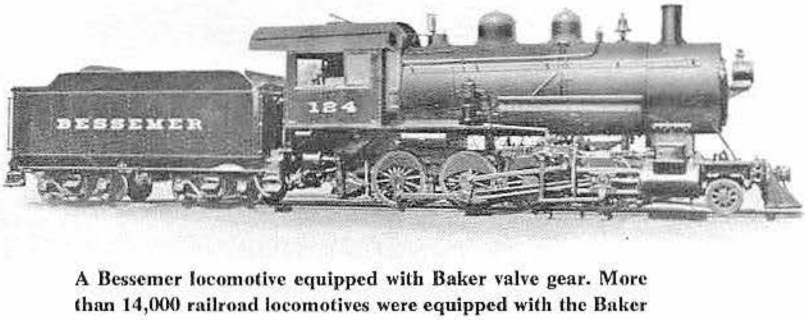
Here is a good close-up of the front of the 18 H.P. Baker steam road roller of 1911. Note the front roller scraper attachment.



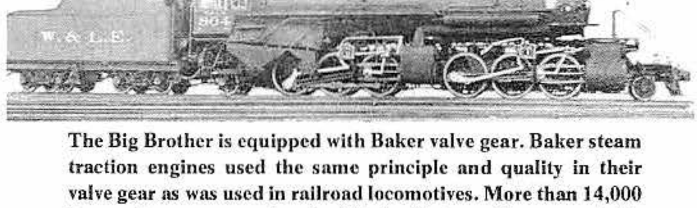
This is the flywheel side of the 18 H.P. A. D. Baker steam road roller pictured in the 1911 A. D. Baker Co. catalog.



A 19-65 H.P. Baker road roller, pictured in a 1929 catalog. The Baker was a 10-ton unit having an Ohio Standard high pressure boiler. The boiler, cylinder, valve gear gearing and general design were the same as in the 19-65 H.P. steam traction engine. The peculiar design of the concave rolls permitted free handling and steering of the Baker roller. The rear rolls overlapped the front roll four inches on each side. The roller had an exceptionally large boiler and water capacity.



A Bessemer locomotive equipped with Baker valve gear. More than 14,000 railroad locomotives were equipped with the Baker valve gear.



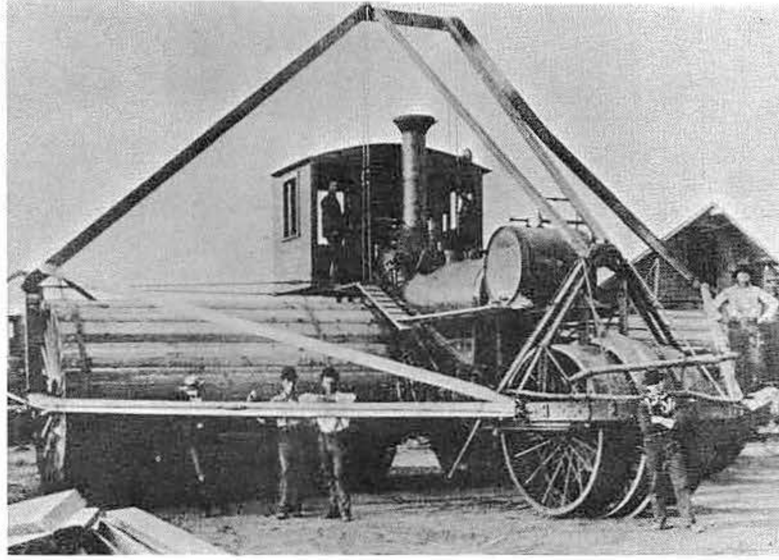
The Big Brother is equipped with Baker valve gear. Baker steam traction engines used the same principle and quality in their valve gear as was used in railroad locomotives. More than 14,000 locomotives were equipped with the Baker valve gear. A. D. Baker held the patents on this gear.

Best Mfg. Co.

In 1859, at the age of 21, Daniel Best tramped west over the Oregon Trail. Bad luck hounded him for a decade as he tried gold mining, hunting and sawmilling all over the Northwest. In 1869, he took charge of his brother's ranch near Marysville, Cal. At the time grain was hauled from the Best fields to town for cleaning . . . the charge being three dollars per ton. Best wondered: "Why not bring the cleaner to the grain instead?" In the winter of 1869-1870, he developed and built three portable grain cleaners. During the following harvest, he and his brothers operated all three machines. Best soon opened a local factory for their manufacture.

Not long after, the young inventor moved to Albany, Oregon, and added a seed dusting machine and fanning mill to his line. He experimented with a wide variety of agricultural and general usage products, and even patented a washing machine in 1877. In the early 1880s, Best moved once again—this time to Oakland, Cal. Business continued to boom; the company became so pressed for space that products were stored in the streets. When Oakland police objected, he looked again for a new location and chose nearby San Leandro, a few miles to the south. A Caterpillar Tractor Co. plant now stands on the same site.

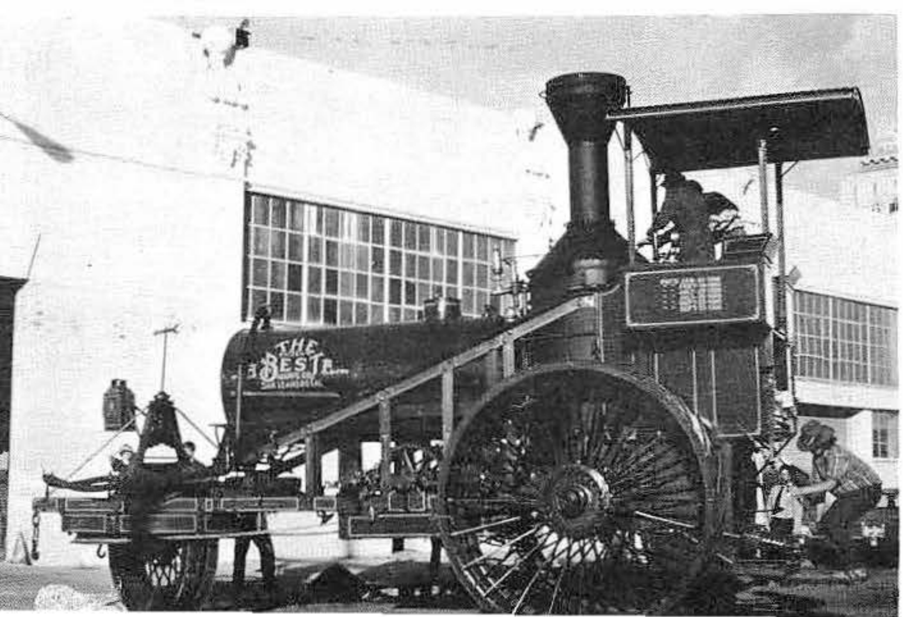
Daniel Best delivered his first steam harvester in February, 1889, for $4,500. He then stayed on for one week to instruct the new owner. The machine had two sections: traction engine and combine. The two traction engine drive wheels were eight feet high and 26 inches across. Great wheel size helped the machine get over logs and up out of holes . . . in addition to distributing the 11-ton weight over a larger area. Straw, wood or coal served as fuel.



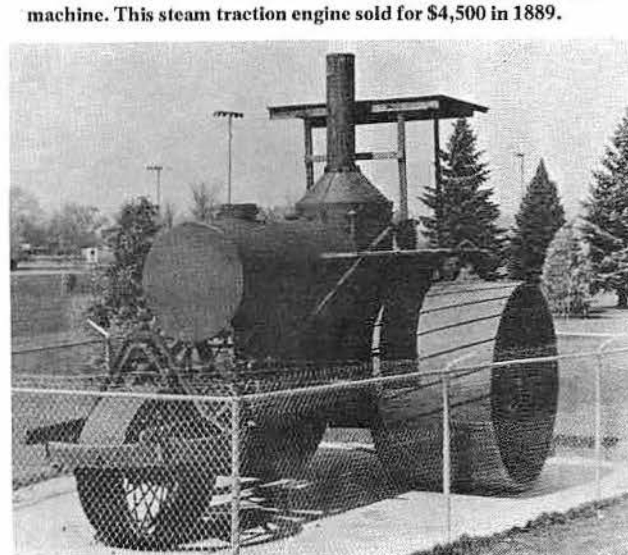
Daniel Best in 1900 built this 110 H.P. Best steam traction engine for the Middle River Farming Co. of Stockton, Cal. The 20-ton machine had wood covered drive wheels 15 feet wide and nine feet in diameter. The Best Mfg. Co. of San Leandro, Cal., merged with the Holt Mfg. Co., Stockton, Cal. in 1925 to form the Caterpillar Tractor Co. The home office of the Caterpillar Tractor Co. today is Peoria, Ill.

This Best steam traction engine was built in 1906. It is owned by Oscar O. Cooke, Billings, Mt. Oscar operates this engine every year at his steam show at Oscar's Dreamland, Billing, Mt. The engine was rated by Best at 100 H.P. with 100 lbs of steam pressure and 150 H.P. with 150 P.S.I. It is a oil burning engine. Road speed varies between 5 and 6 M.P.H. Years ago it was used with six 10-ton ore wagons hauling nickel and silver ore from the mine eight miles to the smelter, twice daily.

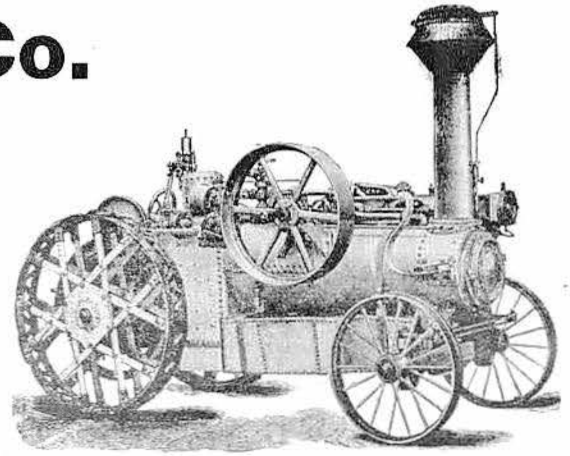
This Best 110 H.P. steam traction engine was built in 1902. It is owned by the Oakland Museum, Oakland, Cal. Restoration took over three years and some 3,000 hours. Three dozen local firms donated all materals used in refurbishing, totalling some $18,000. Today it is in running order and burns coal or wood.



Sleeping safely behind its fenced lot is this 110 H.P. Best steam traction engine built in 1906 by Best Mfg. Co., San Leandro, Cal. It is owned by the City park district of Rexburg, Idaho. Daniel Best of San Leandro, produced a steam traction engine in 1889. After his first sale, he stayed on for one week to give instructions to the new owner on how to operate the 11-ton machine. This steam traction engine sold for $4,500 in 1889.



Birdsall Co.



A patent steering device was used on this Birdsall steam traction engine built in 1886. This engine had the water service attached to the boiler. The engine was adapted to any work of the ordinary traction engine, but was more particularly intended for hauling freight on the road.

The Birdsall Co. manufactured steam traction engines, road rollers, road engines, portable engines, threshers, and saw mills. The company first began business in Penn Yan, N.Y., in June, 1860, under the name of H. Birdsall & Son. The firm was composed of Hiram and Edgar M. Birdsall. Their productions then consisted of threshers, horse powers, mowing machines and various agricultural implements. This business was conducted on a moderate scale for a time.

The diligent attention given to details and first class workmanship, soon brought Birdsall products into deserved popularity, and the business increased from year to year, as the reputation of the goods became more widely known. Up to the year 1874, the company had been confined to the manufacture of horse-power threshers only.

About this time steam power began to be used to some extent for threshing purposes, and this company began the manufacture of farm engines in connection with the threshing business. The same energy and careful attention to the perfection of manufacture which had always characterized this company was now directed towards the development of an engine that would at once, by its economy and utility, maintain the reputation of the products. As a result, trade increased so rapidly that the business soon outgrew the facilities.

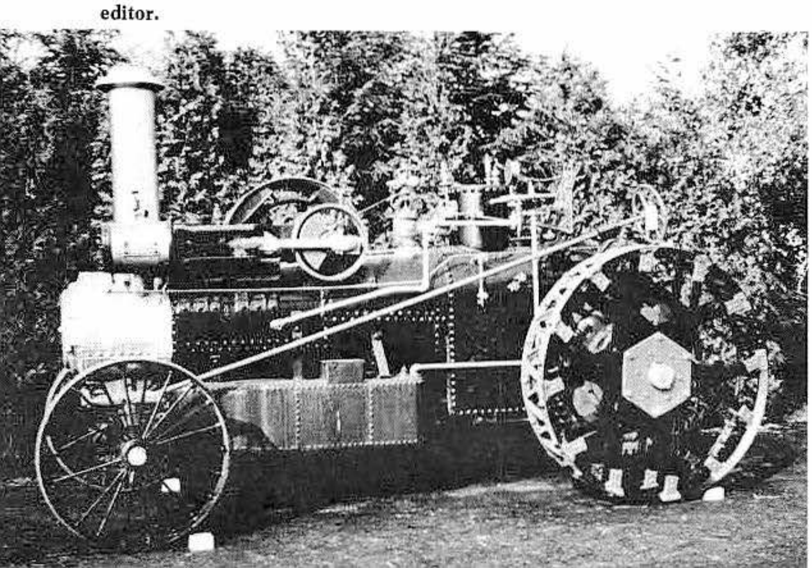
Facing the choice to greatly enlarge and remodel the works at Penn Yan, or move to where more extended facilities could be afforded, the company finally selected Auburn, N.Y. Birdsall purchased the works formerly occupied by the Cayuga Chief Company, and moved in October, 1881. Having now obtained all the facilities required for an increased production of the portable engine and thresher, the company resolved to further extend its line of manufacture. Acting upon this, after a series of careful experiments, it produced its first traction engine.

Attention was now directed toward an improvement in threshing machines and the New Birdsall Vibrating Thresher stands in the foremost rank of this class of machinery. A growing want was now felt among the owners of comparatively small tracts of timber, situated remotely from permanent saw-mills, for a mill that could be moved from place. The company at once interested itself in this problem, and the Novelty Saw Mill was the result. Its simplicity and strength, and its ease of portability has given it a prominent place in all parts of the country.

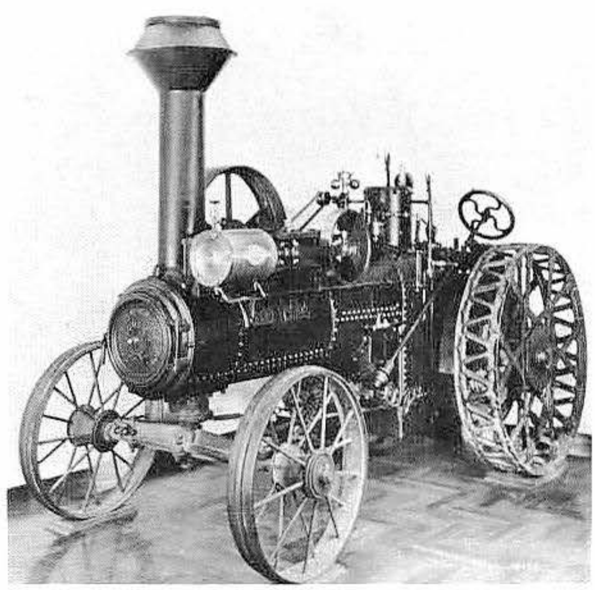
There were upwards of 300 men employed in the works, and in each and every department were found the best skilled mechanics. Edgar M. Birdsall was president of the company until 1886.

The Birdsall steam traction engine was the only one at that time made with the Automobile steering gear, open or solid faced drivers and a six to ten barrel water capacity on the engine. The cylinder was of the Corliss pattern, and was cast with the ways and brackets in one piece. The compensating gear was placed directly on the rear axle, inside of the large spur driving-gear, and the power was transmitted to it from the large gear through a heavy steel coil spring, thereby forming a perfect cushion to protect the gearing from sudden shocks or severe strains when starting the engine in either direction. The Cross-Head was adjustable to take up wear, and the slides had large wearing surfaces, which were concaved to prevent cramping or heating. The connecting rod was so constructed as to be practically free from vibration. The result was a perfectly smooth-running engine, even under the strain of a heavy load. The crank head was perfectly balanced, as was the fly wheel.

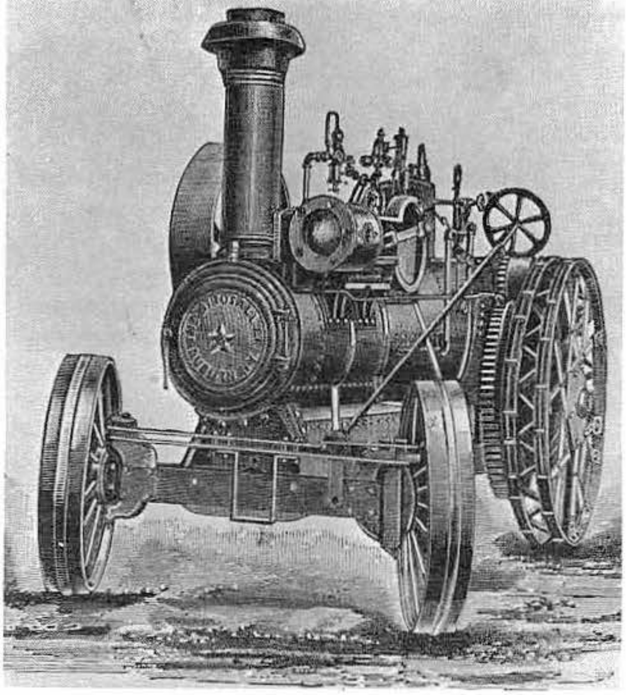
This 12 H.P. Birdsall steam traction engine, built by Birdsall Engine Co., Auburn, N.Y., in 1904, is owned by Mrs. B. Earlene Ritzman of Enola, Pa. The late Reverend Elmer Ritzman, Methodist minister for 42 years, was founder and publisher of "Iron-Man Album Magazine" and "Gas Engine Magazine." He lived from 1888 to 1971. Mrs. B. Earlene Ritzman, his wife, was editor till August 1973. Gerald S. Lestz of Lancaster, Pa. is now editor.



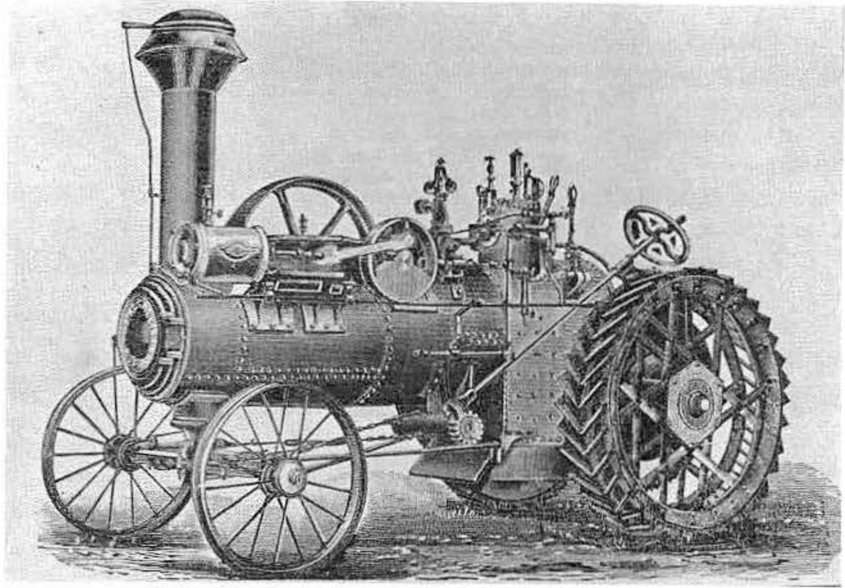
This Birdsall steam traction engine, built in 1888, is owned by the Henry Ford Museum, Dearborn, Mich. This picture is from the collections of Greenfield Village and the Henry Ford Museum. This engine used a valve eccentric that was reversed by a sliding rack instead of the more common link motion.



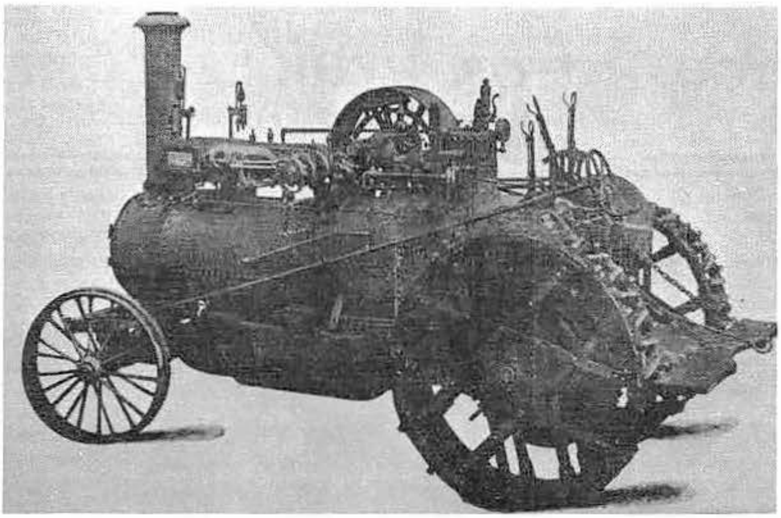
Birdsall Co.



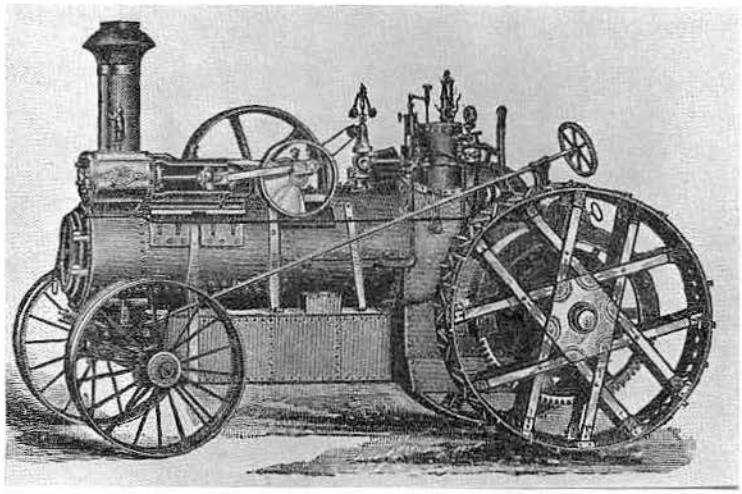
A close-up of the patent automobile steering gear used on the 15 H.P. Birdsall steam traction engine built in 1897.



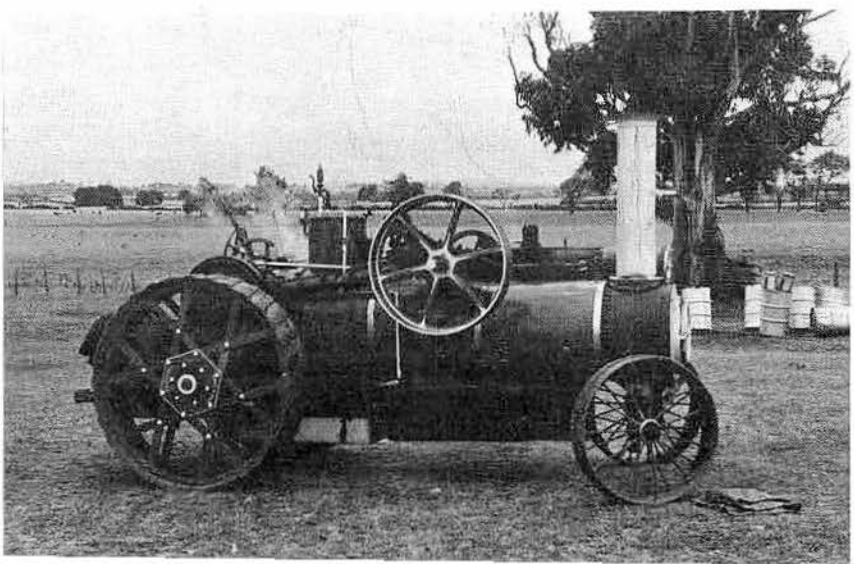
This is a chain steering version of a 15 H.P. Birdsall steam traction engine built in 1897. The Birdsall Co. made the following: Threshers, horse powers, mowing machines and various agricultural implements. The Birdsall steam traction engine was the only one at that time that made the Automobile steering gear, open or solid faced drivers, and a six to ten barrel water capacity on the engine.



A Birdsall double cylinder steam traction engine as it appeared in the Threshermens Review, in 1902. This engine had a suspended water tank, provided with ejector and hose for filling the tank. The front wheels were wrought iron. It had the patent steering device and the patent open-faced driving or traction wheels with their peculiar construction.



A Birdsall steam traction engine built in 1900. The boiler and engine were mounted on a through shaft at the rear of the firebox with coil springs on the axle boxes and frame to carry the driving pinion shaft. A fore and aft driving shaft transmitted the power from the engine by a bevel gear, so that by its slight oscillation the springs were compensated. The differential gear was within the large spur gear on the main shaft, and was provided with cushion springs to prevent shock when starting or reversing. The traction wheels were of novel construction, their face being made of angle iron lugs placed in reversed diagonals and riveted to angle iron tires. The spokes were of flat iron, in basket form, and riveted to the flanged hubs and tires.



This 8 H.P. Birdsall steam traction, Engine #2538, is owned by Verdon E. Pearn of Tasmania, Australia. As far as is known, this is the only Birdsall steam traction left in Australia today. The Birdsall Co. built steam traction engines, road rollers and road engines, portable engines, threshers, and saw mills. It began business in Pen Yan, N.Y., in June, 1860, under the name of H. Birdsall & Son.

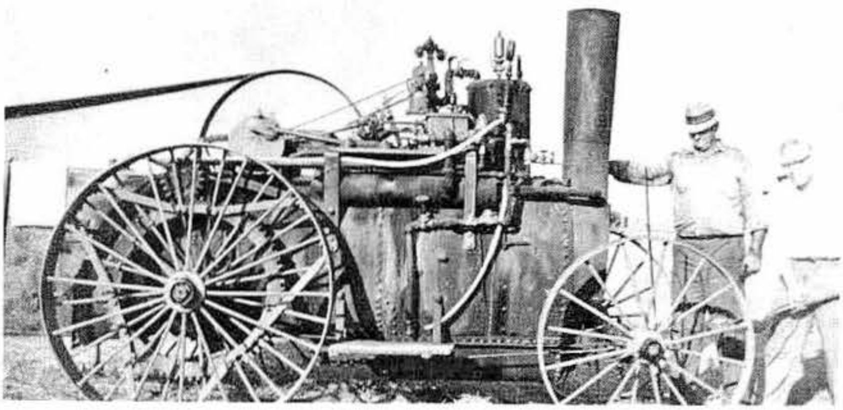
Blumentritt

Joe Blumentritt of New Hartford, in Winona County, Minn., set about to do something about the prevailing conditions of the time. In the early 1870s when 20 years old, he built for himself his first portable steam engine of six horsepower.

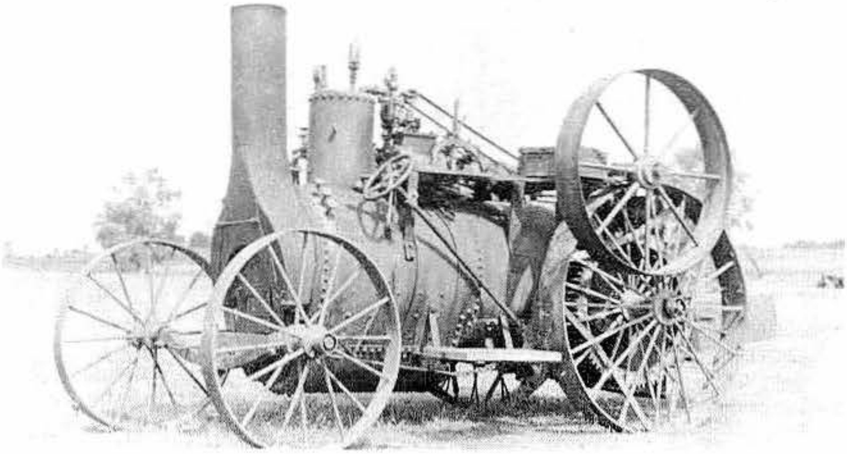
The engine was successful in every respect except it had to be moved from place to place by horses or oxen. Blumentritt decided he wanted his engines to move by their own power. He designed traction gearing and steering devices and improved the original engine. By the time he had built the second engine, it became evident they were successful. Others now wanted to buy similar engines. This led Blumentritt to build the engine shop on his farm, which had a creek running through. On the creek he constructed a large earthen dam and water wheel to furnish power for the shop. Mr. Blumentritt made all his tools, including dies.

A large air hammer was used for making all forgings. The patterns for the castings were made by himself.

The Blumentritt engines were double cylinder built in 6, 12, and 24-horsepower sizes. They were return flue and operated from the side, fired from the front end. They were straight gear, no clutch. The pinion was moved over and a square key inserted. These engines were the first traction engines built west of the Mississippi River, and as far as can be determined only one is left today. This is a 12 H.P. double, which was rebuilt in 1952. The engine was built in 1878.



Orin Krogstad of Osage, Iowa, is the owner of this 12 H.P. Blumentritt steam traction engine built by Blumentritt Co., Spring Valley, Minn. in 1878. Mr. Krogstad's engine is believed to be the only one left today, and the first traction engine built west of the Mississippi. At 12 H.P. it runs at 200 RPM, 85 PSI, and goes 2 MPH. A blacksmith living near Spring Valley, Minn. claims that only 22 Blumentritt steam traction engines were made.



Another view of the 12 H.P. Blumentritt steam traction engine owned by Orin Krogstad of Osage, Iowa. Joe Blumentritt of New Hartford, Minn., decided to do something about the prevailing conditions of the time. In the early 1870s when about 20 years old, he built for himself his first portable steam engine of six horse power. He then built a steam traction engine, which was a success.

Buffalo - Pitts

John A. and Hiram A. Pitts were twin brothers born on December 8, 1799, in Winthrop, Maine. The first named was the founder of the universally known Buffalo Pitts Co., of Buffalo, N.Y.

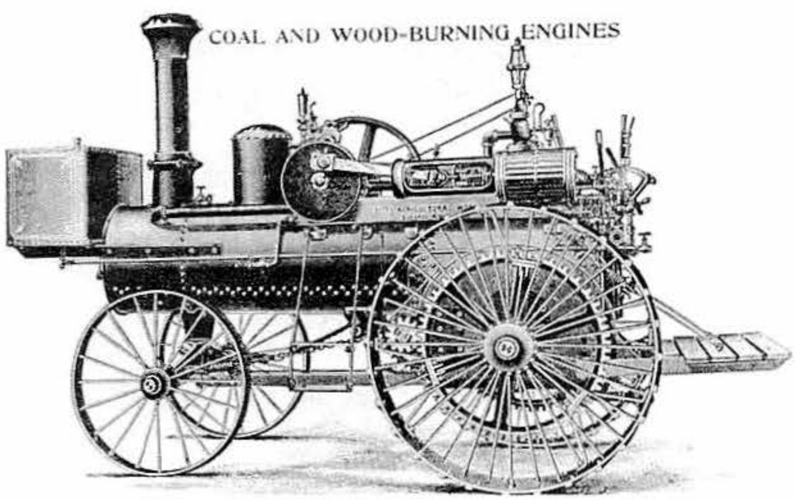
Th brothers began the manufacture of tread powers on a large scale in their native town, and introduced them in the New England states as power for the ground threshers. These were revolving wood cylinders, mounted in a crude frame, with iron spikes driven into the wooden cylinder for teeth. It was while operating these machines that H. A. Pitts conceived the idea of combining it with a common fanning mill, making the new machine in portable form. He made a machine on this plan in 1834, which worked successfully.

This was rapidly improved upon until in 1837 when they received a patent for a thresher which was the original of the great family of endless apron threshing machines. It had all of the essential features of those of the present day.

They manufactured these machines until 1840 when John A. Pitts decided to seek a better location. He went first to Albany and from there to other cities, finally locating in Buffalo, N.Y. There he began the manufacture of the machine which has become well known over the United States as the Buffalo-Pitts, and continued the business successfully until his death in 1859. The business was continued by the partnership which developed into the Buffalo Pitts Co. Hiram A. Pitts went finally to Chicago where he established a different business.

The Buffalo-Pitts boilers for the year 1896 were made from new improved patterns and designs, embodying in their construction the best principles known in the art of boiler and engine building in their class, and also workmanship and material.

The fire box and heating surface of boilers were duly proportioned to the amount of power required of the engines, and all were identically the same except as to sizes of parts and capacity of each. The furnace casing was made of one piece #1 shell steel, 5/16-inch thick, 60,000 lbs. tensile strength. The fire box was made of one-piece best quality flanged fire-box steel, 9/32-inch thick, caulked inside and out. The shell was made of one-piece #1 shell steel 9/32-inch thick, 60,000 lbs. tensile strength, with the seams double riveted. The heads and tube sheets were the best quality of flanged steel. The tube sheets were 3/8-inch thick, with the holes for tubes reamed.



The tubes were of 2-inch lap welded, fitted into tube sheets with copper gaskets of the approved thickness adopted by the best locomotive boiler builders. All the tubes were arranged in vertical rows with ample spaces between, providing for perfect water circulation. The fire box was entirely surrounded by water, with large steam space and large, high domes. Stay bolts were refined iron, 7/8-inch diameter, screwed into the plates and riveted in a thorough manner.

The boilers were supplied with the Moore independent steam pump and Penberthy injector, which were compactly and conveniently arranged for easy access to all the parts. All feed water passed through the front end of boiler. A 100-gallon steel tank was located on the front of boiler, into which water was supplied or taken from, either with pump or injector. All boilers were fitted with the best make of steam and water gauges, pop safety valve, fusible plugs and all necessary brasses for the best quality. Live steam was conducted from the top of the dome through the interior of the boiler direct to the governor chamber and steam chest.

The engine was of the bored guide type, which provided for self-adjustment and alignment of working parts, and simplified by dispensing with many pieces in its construction. Cylinder and guides were made in separated pieces, which provided for independent renewal of these parts. The cylinder and crank shaft bearing were each mounted on opposite ends of the heater, thus avoiding disturbance of working parts by the extreme expansion and contraction of the boiler. All cast, wrought iron or steel parts were attached to the boiler with bolt ends and nuts on the outside of the parts.

The piston connection with the crank wheel was a solid-steel connection rod, without straps or gibs. Steam was admitted to the engine by the well-tried, quick-opening balanced throttle valve, lubricated with the Swift sight-feed lubricator (all other parts lubricated by solid brass oil cups), and speed was regulated by the Pickering governor.

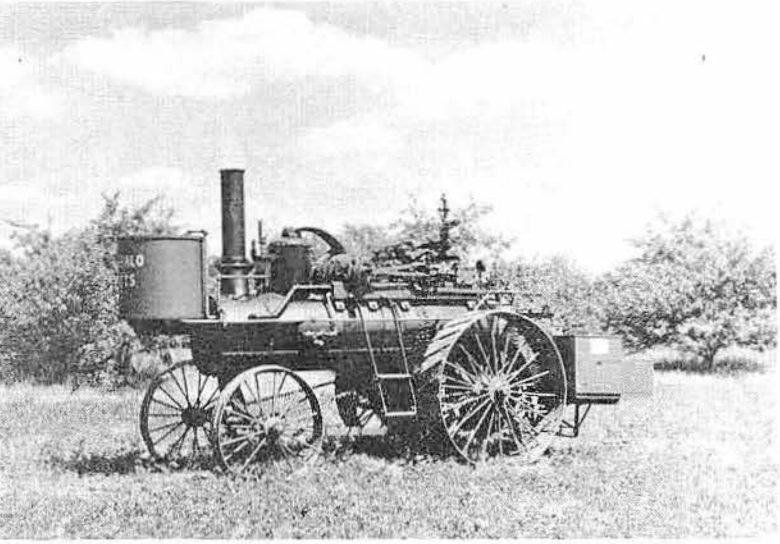
The engines were equipped with the Woolf patent reverse valve gear, and a three-point bearing friction clutch, friction clutch lever and steering hand wheel, all were on the right side: Cast steel pinions, properly tempered to give strength, smooth wear and durability, were on all the countershafts.

The Buffalo Pitts Co. was incorporated in 1877. It claimed to have been the oldest of all thresher manufacturers and to have built the first machine for separating grain from the straw.

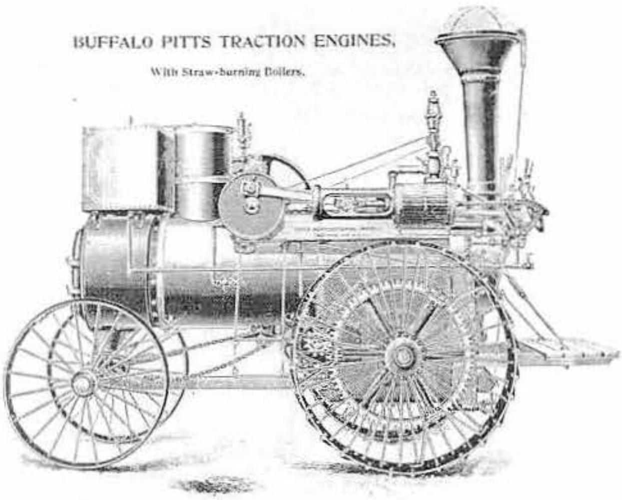
The Buffalo Pitts Co. made the following: Steam traction engines, single and double cylinder, return flue, portable steam engines, California thresher, steel frame thresher, Rice thresher, and the Buffalo Pitts steel water tank.

The 8, 10, and 13 H.P. Buffalo-Pitts steam traction engine was shown in a 1896 Buffalo-Pitts Steam Roller Co. catalog. Built in Buffalo, N.Y., this engines fire-box was made of one-piece best quality flanged fire-box steel, 9/32-inch thick, 60,000 lbs. tensile strength, with seams double riveted. Heads and tube sheets were of the best quality of flanged steel, with tube sheets 3/8-inch thick and the holes for the tubes reamed. Live steam was conducted from the top of the dome through the interior of the boiler direct to a governor chamber and steam chest. The engine was equipped with the Woolf patent reverse valve gear, and the three-point bearing friction clutch, with friction clutch lever and steering hand wheel all on the right-hand side. Cast steel pinions, properly tempered to give strength and smooth wear and durability, were on all countershafts.

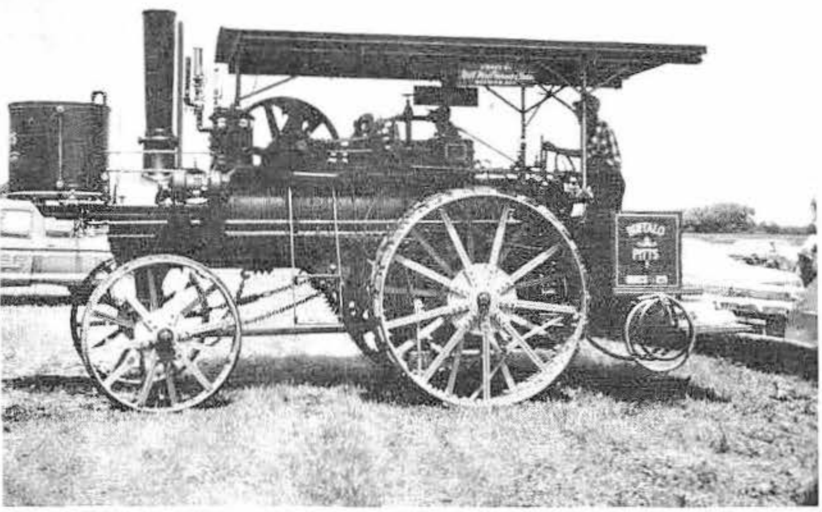
Buffalo - Pitts



Earnest Hoffer of Toledo, Ohio, owns this 14 H.P. Buffalo-Pitts steam traction engine built in 1902. John A. and Hiram A. Pitts were twin brothers born on December 8, 1799, in Winthrop, Maine. The first named was the founder of the universally known Buffalo Pitts Co. of Buffalo, N.Y.

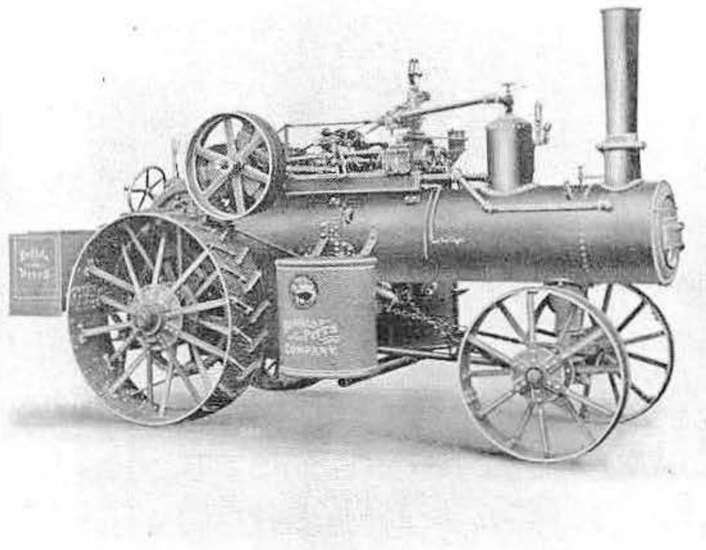


This is a side disc crank type of 14 and 16 H.P. Buffalo Pitts steam traction engine, with a straw burning boiler. This picture was taken from a 1896 Buffalo Pitts catalog. The shell of this boiler had a 33½-inch waist, and was fitted with an independent smoke box end. The dome was 28 inches high and 6 inches diameter. A 100 gallon water tank was on the front end of the boiler. The boiler was fitted with a Moore independent steam pump and Penberthy injector and was supplied with the best make of steam and water gauges, pop safety valve, fusible plugs, and all necessary brasses of the best quality.

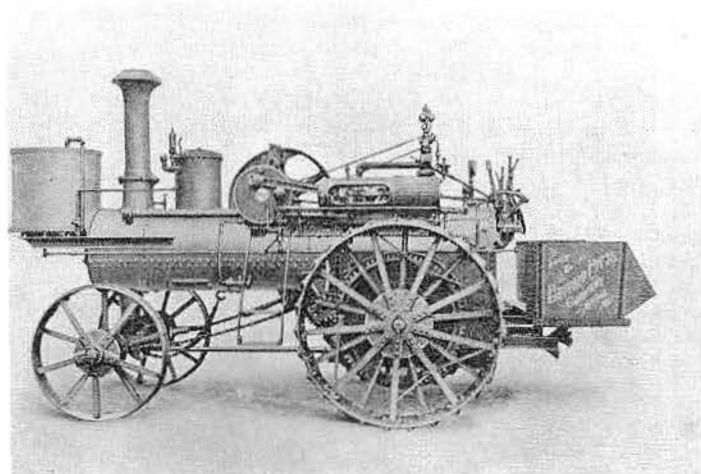


This 14 H.P. Buffalo-Pitts steam traction engine, built in 1912, is owned by Neil McPherson of Norwich, Ontario. It appears at the Ontario Steam & Antique Preservers show at Milton, Ontario. Neil McPherson says that there are only two 14 H.P. Buffalo Pitts left in North America today, his and the one owned by Earnest Hoffer of Toledo.,

The Pitts Agricultural Works

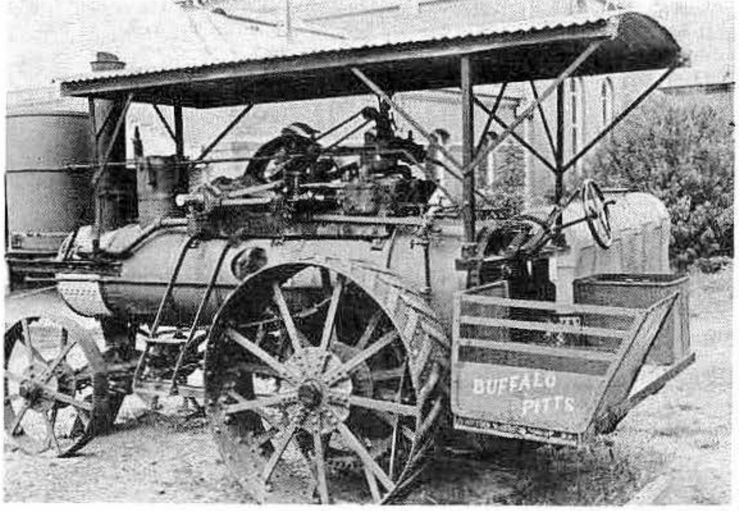


A 18 H.P. Buffalo Pitts rear-mounted double cylinder steam traction engine. The fitting of the cylinders of the double cylinder were guided inside the frame and made a firm and rigid construction. This rendered it impossible for the cylinders to get out of alignment with the crankshaft, which was substantially housed in the frame.

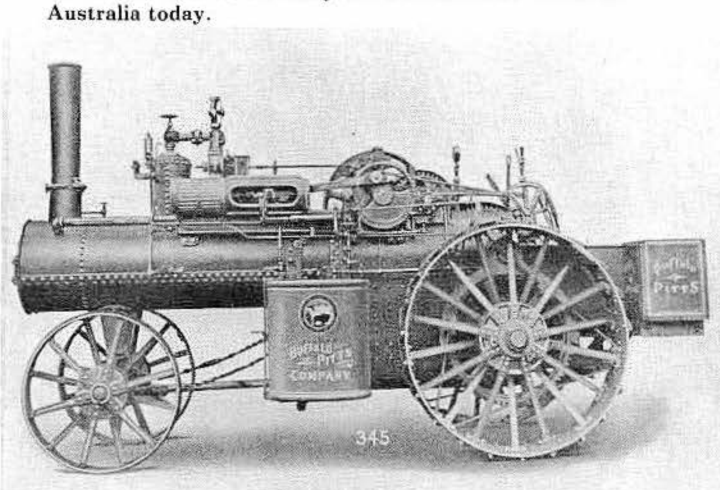


A 15 and 18 H.P. Buffalo Pitts single cylinder, side mounted steam traction engine. Buffalo Pitts boilers were made of the best open hearth fire-box and flange steel, 60,000 lbs. tensile strength. The flues were knobbled charcoal iron, lap welded, and did not leak even under severe conditions. Every boiler was tested at 225 lbs. hydrostatic pressure, and was designed to carry 150 lbs. of steam. All were thoroughly tested both before and after being mounted, by actually firing them up and subjecting them to the same conditions that existed in the field at that time.

Buffalo - Pitts



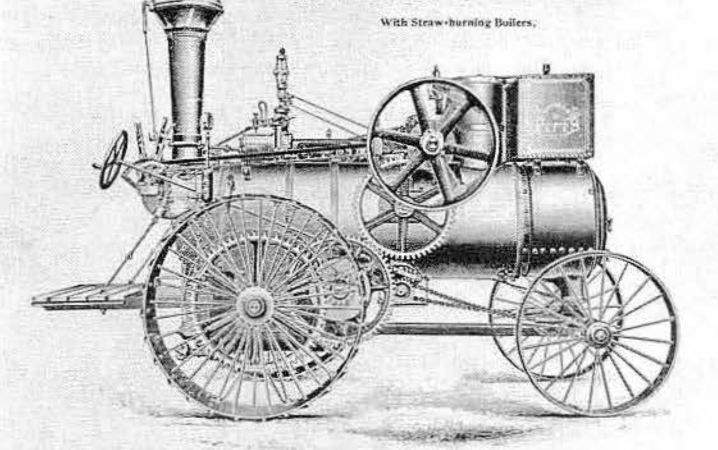
This 14 H.P. Buffalo Pitts double cylinder steam traction engine, Engine #10520, is owned by Bruce MacDonald of Marsden Cottage, new South Wales, Australia. As far as is known, this is the only 14 H.P. Buffalo Pitts in Australia today.



This 18 H.P. Buffalo-Pitts steam traction engine used a solid forged steel connecting rod. These rods were forged from one piece of solid steel. They were of the flat pattern, having solid ends. The connecting rod boxes were of high grade gun metal, which was considered by all experts as the best connecting rod box.

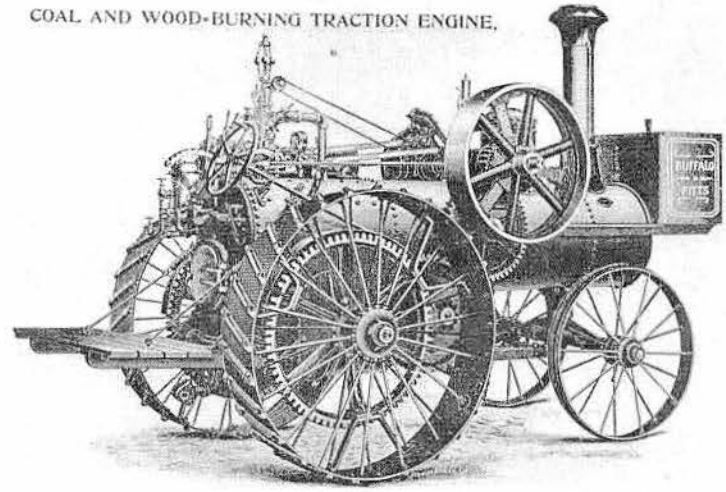
BUFFALO PITTS TRACTION ENGINES.

With Straw-burning Boilers.



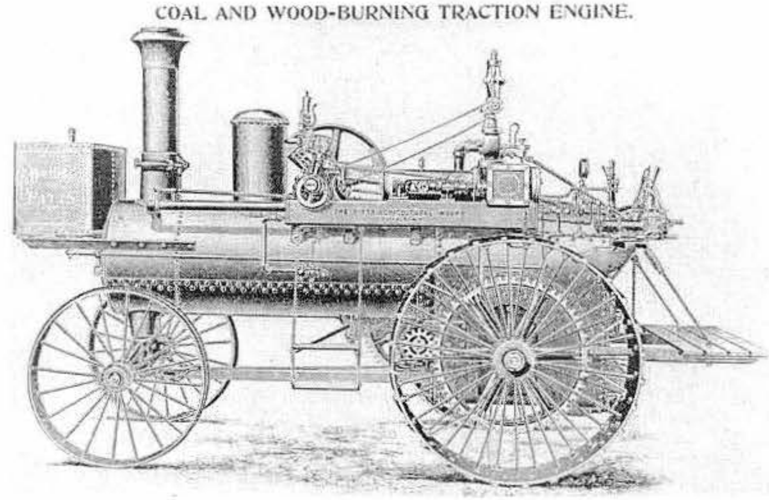
A 20 H.P. Buffalo-Pitts steam traction engine, pictured in a 1896 Buffalo-Pitts catalog. This engine is a return flue straw-burning type. It was equipped with the 3-point bearing friction clutch, Woolf reverse valve gear, 40-inch diameter band wheel with 9-inch face, sight-feed lubricator, Pickering governor, quick-opening balanced throttle valve, Moore independent steam pump, and Penberthy injector.

COAL AND WOOD-BURNING TRACTION ENGINE.



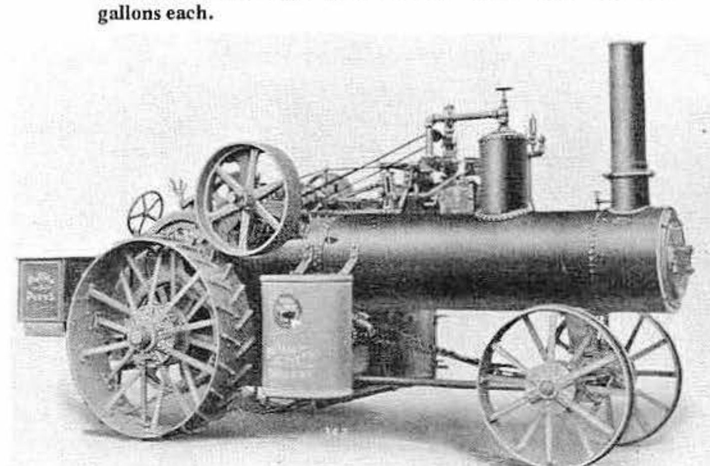
Built in 1896, this 15 H.P. Buffalo-Pitts steam traction engine is a coal and wood burning engine. The shell of the boiler was 30 inches in diameter in the waist and was made of one sheet of 60,000 lbs. tensile strength, homogeneous steel plate 9/32-inch thick, double riveted, thoroughly stay-bolted, and braced. The dome was large and high, from which dry steam was conducted direct to the steam chest of the engine, by a dry pipe running through the interior of the boiler.

COAL AND WOOD-BURNING TRACTION ENGINE.

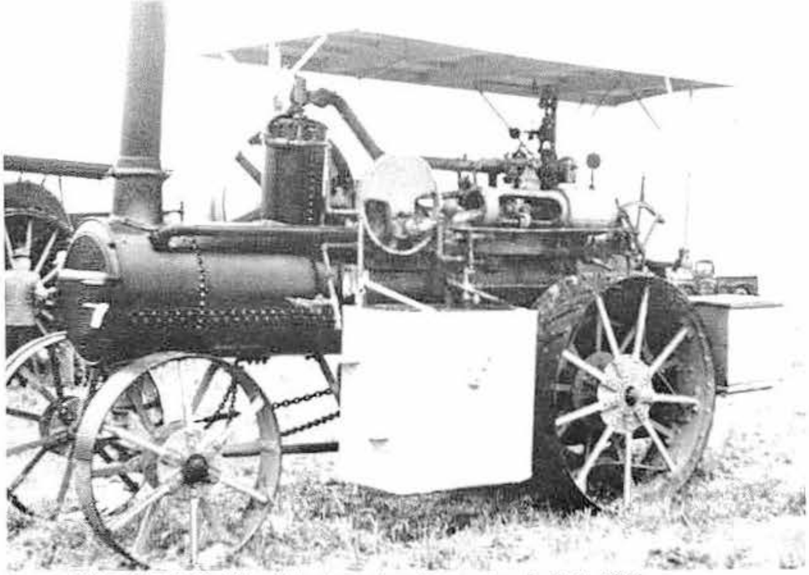


This 20 H.P. Buffalo-Pitts steam traction engine was illustrated in an 1896 catalog. The boiler of this engine was supplied with the Moore independent steam pump and Penberthy injector. It had a 100-gallon water tank on the front of the boiler. All necessary fittings were the same as on the 15 H.P. engine.

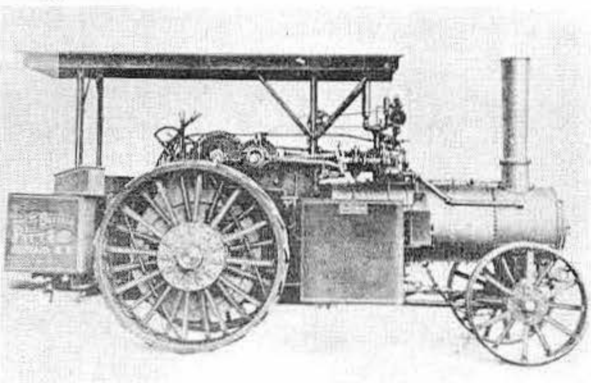
A rear-mounted single cylinder 20 H.P. Buffalo Pitts steam traction engine. The capacity of the side water tanks were 115 gallons each.



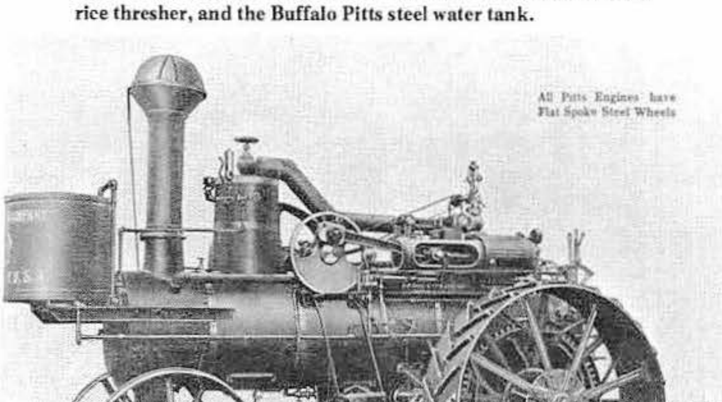
Buffalo - Pitts



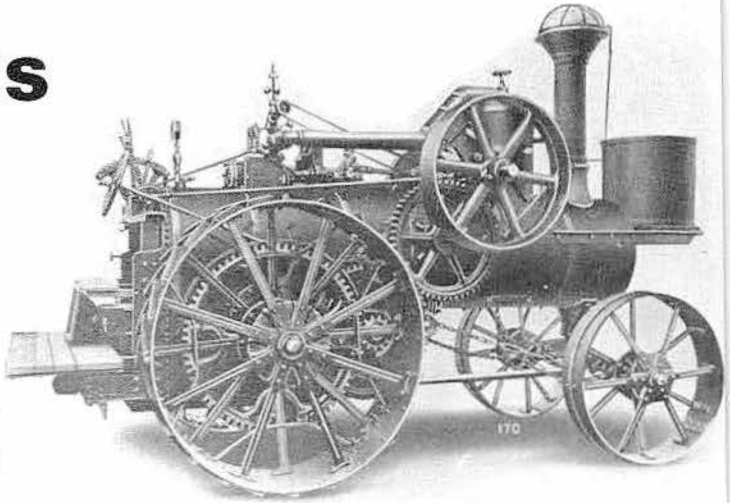
This 20 H.P. Buffalo-Pitts steam traction engine, built in 1914, was owned by Earl Marhanka, of Dowagiac, Mich. This engine is a single cylinder rear reverse mount. It was sold for $2,500 in May, 1973.



The 50 H.P. Buffalo Pitts double cylinder road locomotive was built in 1909. The Buffalo Pitts Co. made the following: Steam traction engines of single and double cylinder, return flue, portable team engines, California thresher, steel frame thresher, rice thresher, and the Buffalo Pitts steel water tank.



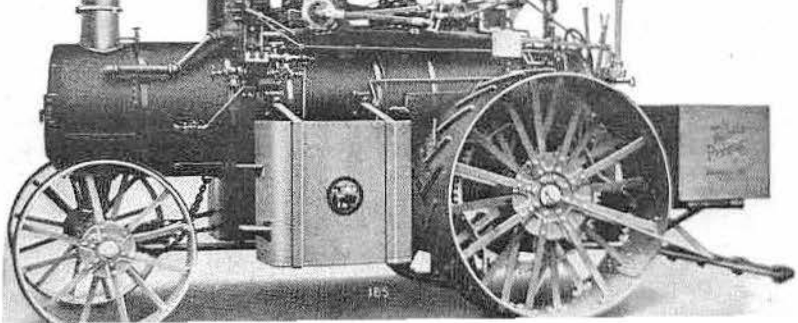
This 25 H.P. Buffalo-Pitts steam traction engine is a single cylinder wood, coal, oil or straw burner. Its countershaft was of high carbon steel, of large diameter. It ran in ample bearings lined with high grade babbitt.



Built on the Universal boiler was this 30 H.P. Buffalo Pitts single cylinder straw burning engine. It would burn wood, coal, oil or straw. It had very heavy gearing and a strong, durable engine for the heaviest kind of threshing.

Another view of the 14 H.P. Buffalo-Pitts steam traction engine owned by Neil McPherson of Norwich, Ontario. This time the engine is at the Norwich District Historical Society show at Norwich, Ontario. The Buffalo Pitts Steam Roller Co. was incorporated under the laws of the state of New York in April, 1902.

A Buffalo Pitts special plow steam traction engine was shown in a 1912 "Threshermens Review." This engine had an exclusive design of countershaft box which formed a truss between the throat sheet and shell of the boiler, making perfectly rigid construction.



Buffalo - Springfield Roller Co.

The Buffalo Springfield Roller Co. resulted from a merger of the Buffalo Steam Roller Co. and the Kelly-Springfield Road Roller Co. These companies were out growths of road roller developments of the Buffalo-Pitts Co., manufacturer of threshing machines and steam traction engines in Buffalo, N.Y., in 1890 and the O.S. Kelly Co. of Springfield in 1902.

In 1957, Buffalo-Springfield Roller Co., of Springfield, Ohio, was purchased by Koehring Co., of Milwaukee, Wisc., and now operates as a division of that company.

The Koehring Co. consists of 14 operating divisions, a wholly owned Canadian subsidiary and many affiliated companies throughout the world, including Koehring Overseas Corp., S.A.

All divisions and subsidiary companies that make up Koehring Co. operate independently. Each has its own management and each is responsible for its own sales, service, product development and research.

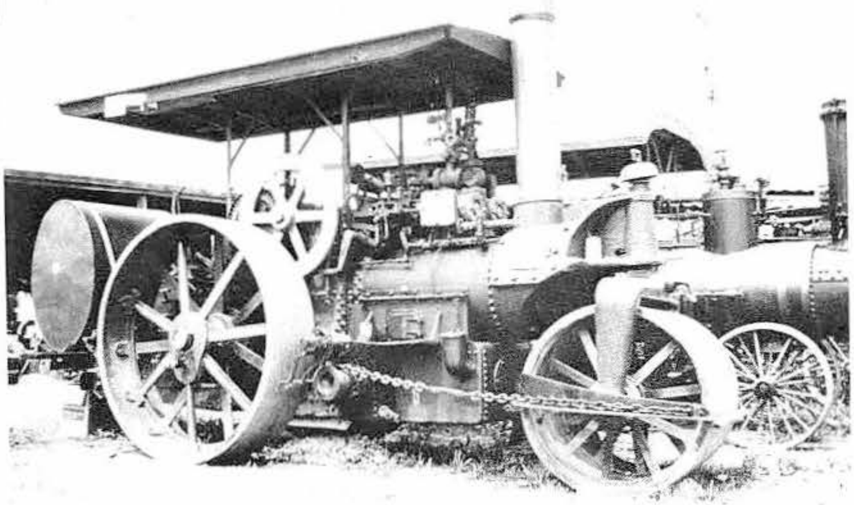
The Koehring Co. has been one of the world's leaders for more than half a century in the design and manufacture of quality equipment for basic industries.

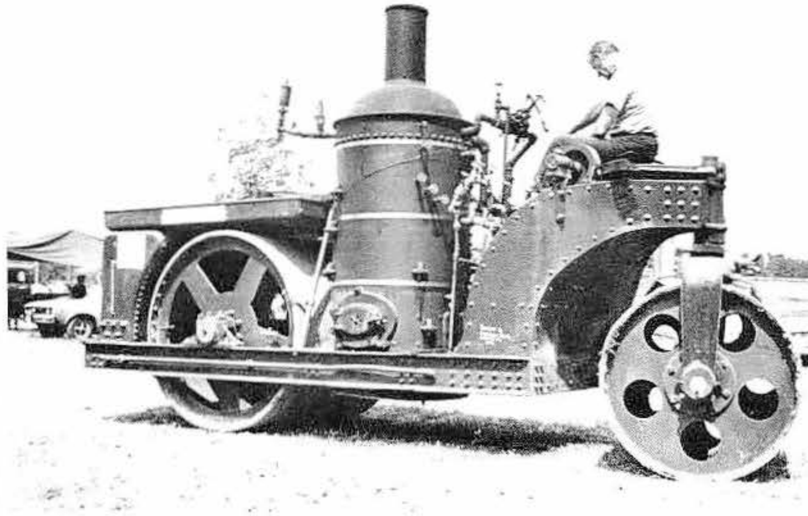
The local division has, in addition to its Springfield operation, two branches—Flaherty branch of Pocatello, Ida., which produces a self-propelled chip spreader and models for power brooms, all used in road maintenance work, and Franks branch in Enid, Okla., which produces portable cable tool and rotary drilling rigs for the water well, oil field and blast hole industries.

The local division, Buffalo-Springfield, is the major producer of compaction equipment, which includes steel wheel, tandem and three-wheel rollers, pneumatic tired rollers, towed vibratory rollers and segmented wheel compactors. Along with this, the company also produces various types of stabilizers, drill rigs, and cargo equipment, which specializes in the Koehravan System.

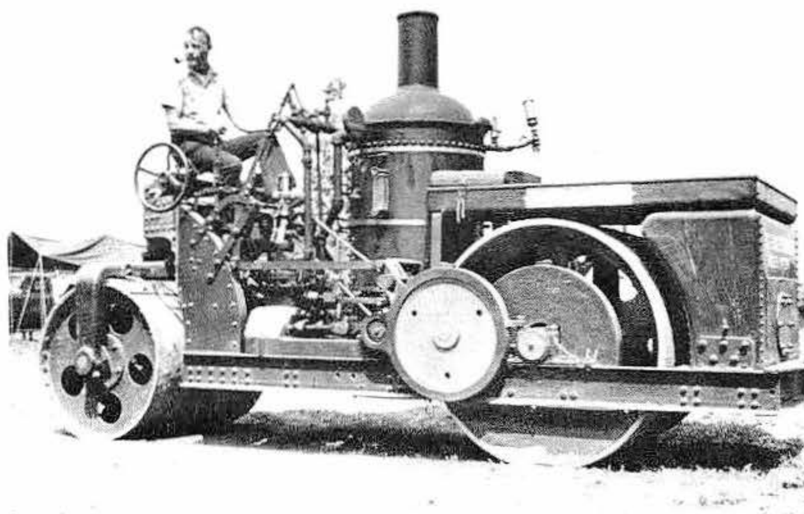
The Buffalo-Springfield Division in Springfield, Ohio, employs approximately 350 persons in its shops and administrative capacities and has a payroll in excess of $1,500,000 annually.

Abe Warner of Washington, Pa., owns this 15 H.P. Buffalo-Springfield Roller built in 1916. It is at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa. In 1957, Buffalo-Springfield Roller Co., of Springfield, Ohio, was purchased by Koehring Co. of Milwaukee, Wisc., and now operates as a division of that company.





A 8 H.P. Buffalo Springfield Roller, built by Buffalo-Springfield Roller Co. of Springfield, Ohio, in 1924. This engine is owned by George Gaunt, of Mullica Hill, N. J. It appears in action at the Rough & Tumble Engineers Historical Assn. show, Kinzer, Pa.



Another view of the 8 H.P. Buffalo Springfield Roller owned by George Gaunt of Mullica Hill, N.J. The Buffalo Springfield Roller Co. resulted from a merger of the Buffalo Steam Roller Co. and the Kelly-Springfield Road Roller Co. These companies were out growths of road roller developments of the Buffalo-Pitts Co. of Buffalo, N.Y., in 1890, and the O.S. Kelly Co. of Springfield, Ohio, in 1902.

Burdett & Webb

Burdett & Webb built three steam traction engines at a plant in New Athens, Ohio. Then in about 1887, the James Means & Co., of Steubenville, Ohio, took over the building of these engines. The number of engines manufactured at Steubenville is not available.

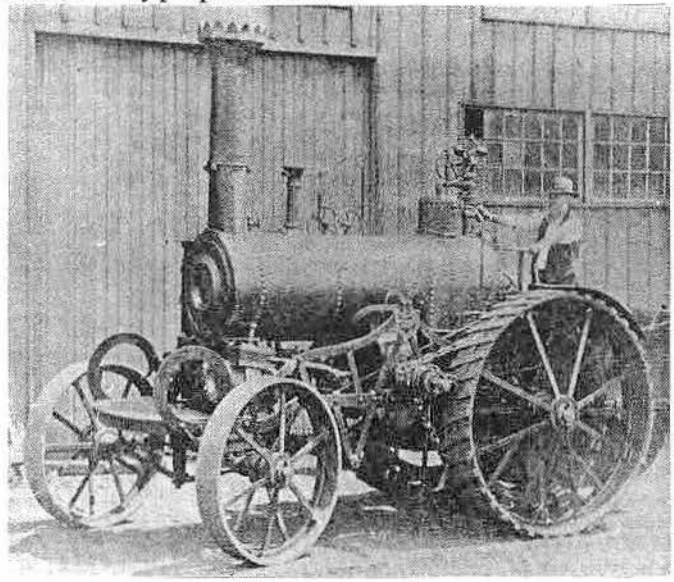
The James Means & Co. was founded by James Means and son, John L. Means, who was born in Steubenville in 1870. After completing his education, he entered his father's office in the James Means & Co., foundry. He remained in the foundry business for 14 years. He took a great deal of interest in the Y.M.C.A.

In 1899 the company changed its name to Means Foundry & Machine Co.

The Burdett steam traction engine was compactly built, and strong where strength was required. It was a neat and shapely looking machine, with no wood used in its construction, all being of iron, steel and brass. Cast steel cog wheels were used, giving great strength with durability and lightness, requisites which were properly considered in all its parts.

It was easily handled by one man, who could fire, run and steer it while on the road. It traveled smoothly and had two speeds of two and six miles per hour, respectively. The slow motion was used in ascending and descending steep hills, the fast motion on good roads and level ground. The throttle, steering crank, brake, reverse and cut off levers were all on the foot board.

The water and steam gauges, gauge cocks, levers for opening the cylinder cocks and starting or stopping the pump were right at the engineer's hand, in fact everything was so arranged that it was unnecessary for the engineer to get off his engine, while in motion, for any purpose whatever.



A Burdett steam traction engine built by James Means & Co. of Steubenville, Ohio. This engine was compactly built, and strong where strength was required. It was a neat and shapely looking machine. No wood was used in its construction, all parts being of iron, steel, or brass. Cast steel cog wheels were used, giving great strength with durability and lightness. Sadly, no other illustrations exist of Burdett engines.

Byron Jackson

Byron Jackson, the youngest of a family of eight, was born in Norwalk, Ohio, in 1841. At the age of 19 he, along with other members of his family, emigrated to California, and settled in the Sacramento Valley.

By the time he was 21 years of age he had acquired a farm near the town of Woodland, and here he remained for the succeeding ten years.

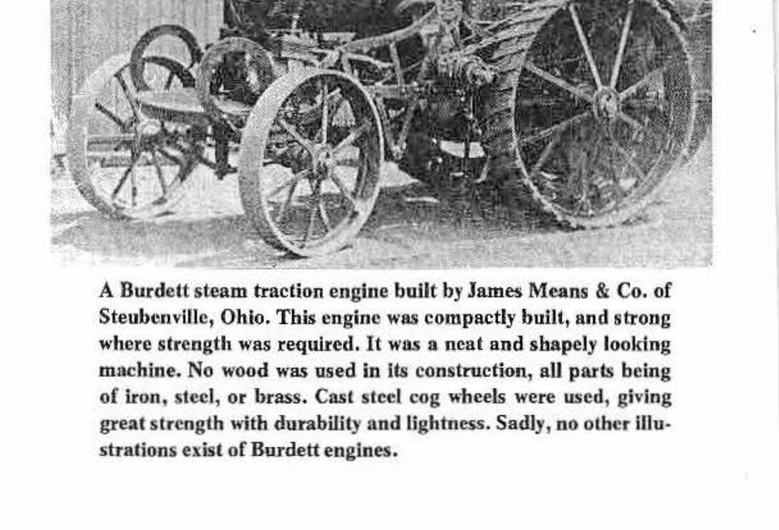
It was during this interval of time that his inventive genius began to assert itself. He invented a feeder for a threshing machine, which later came into universal use. Then he developed an elevator for the harvesting machine. Horse forks and derricks for use in the hayfield were other inventions of his.

Having procured patents on these farm implements, and finding a ready market, he opened a shop in Woodland in 1872, thereby laying the foundation for the Byron Jackson Co. of today.

Here began his experiments in the building of centrifugal pumps. In order to more successfully operate these pumps with increased speeds, he also engaged in the building of both stationary and self propelled steam traction engines.

Many irrigation plants were equipped with Byron Jackson pumps, engines and boilers.

By 1879, the business had grown to such proportions that he deemed it wise to move to San Francisco. A factory was established and newly equipped at 625 East Sixth Street, and shortly thereafter a sales office was opened on Market Street.



The Byron Jackson three-wheel drive automatic compound steam traction engine was designed in 1890. Byron Jackson was born in Norwalk, Ohio, 1841. He invented a threshing machine feeder, a harvesting machine elevator and hayfield horse forks and derricks. He opened a shop in Woodland, Cal. in 1872, laying the foundation for the Byron Jackson Co. of today. The company was one of the first manufacturers of centrifugal pumps. They also made steam portables and steam traction engines.

J. I. Case Co.

In western New York state, Caleb and Deborah Case had taken up a homestead at Williamstown in 1811. Eight years later their fourth son was born on December 11, 1819, and was named Jerome Increase Case.

Caleb Case was not too fond of the hard work involved in flailing out his grain, but this occupied him and his sons for the most of the winter, and only let up in the spring in time for them to start the field work. Small wonder then that Caleb Case was one of the first in his community to purchase one of the "Groundhog" threshers. His son Jerome, took the greatest interest in the operation of this thresher and soon became the family thresherman. The efficiency of the Ground-hog thresher as compared to the flail also enabled the Cases to do a bit of threshing for their neighbors. Hence Jerome I. Case was a custom thresherman at an early age.

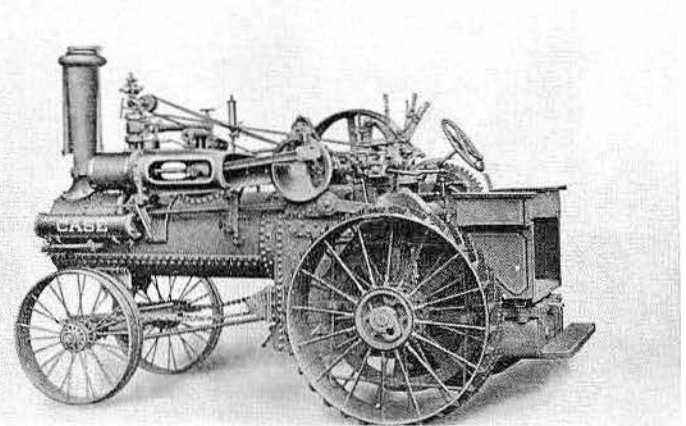
At age 24 J. I. Case went west to Rochester, Wis., late in the fall of 1842. He brought with him six of the latest types of threshers, for he had heard they would have ready sale out on the frontier. These machines were bought on credit, and five were sold at a profit. This gave him a bit of capital with which to get started, and also marked him as a shrewd business man.

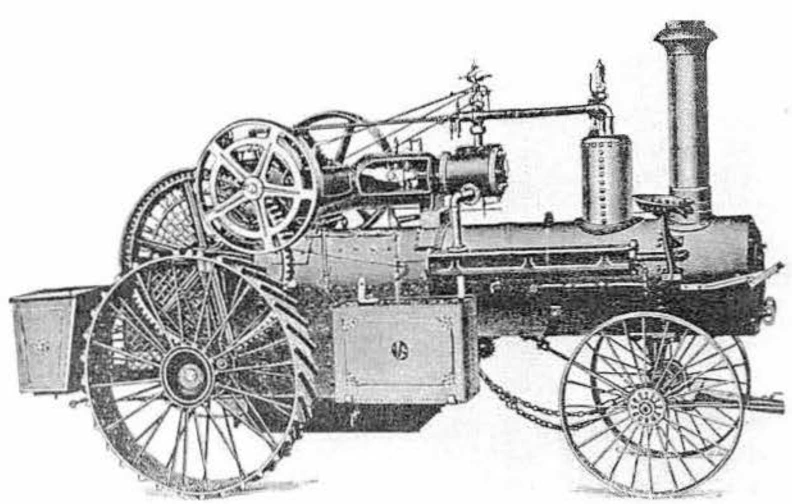
With the remaining machine, he resumed his trade of custom threshing. When not occupied by this, he was busy keeping his machine in repair. Working as he did, with and on his thresher, he discovered many of its shortcomings. By discussing these with farmers, he found that there was a need for an improved machine.

It was with this need in mind that he moved to Racine, Wis., where he rented a small shop and started to build what was his idea of a good thresher. Success was his, and three years later he built a shop of his own. Sweep and tread powers were added to the line of goods. Case, wishing to keep his threshers in the front rank, also added improvements of other prominent thresher builders: such as Pitts, Wemple, Farquhar, Russell and others.

The building of threshers, horse-powers and other machinery had finally reached the point where it required a considerable number of skilled men to manage the business, hence in 1863 a partnership was established under the title J. I. Case & Co., although the shops were still known as the Racine Threshing Machine Works. In this new firm J. I. Case was president, his brother-in-law, Stephen Bull, vice-president, M. B. Erskine was factory superintendent and R. H. Baker was general agent and collector.

A 9 H.P. Case steam traction engine built in 1906. This was the smallest Case engine, using a 7¼ x 10-inch cylinder, rated at 9 H.P. Under the brake test it developed fully 30 H.P.





A 10 H.P. J. I. Case steam traction engine was pictured in an 1897 J. I. Case catalog. This engine is a center crank simple that burned coal or wood. This engine's crank shaft was held by four large and strong bearings; two were at the crank, one was against the pulley hub and one against the pinion. By this arrangement the crank could not tremble or jar while running on the road or in threshing; it also kept the crank in perfect line and resulted in easy running without danger from hot bearings.

In 1869 the new Case Eclipse thresher was introduced. This year the company also sold its first portable steam engine under the Case name. The sale of portable steam engines for use with threshers gradually increased till in 1876, when 75 were sold.

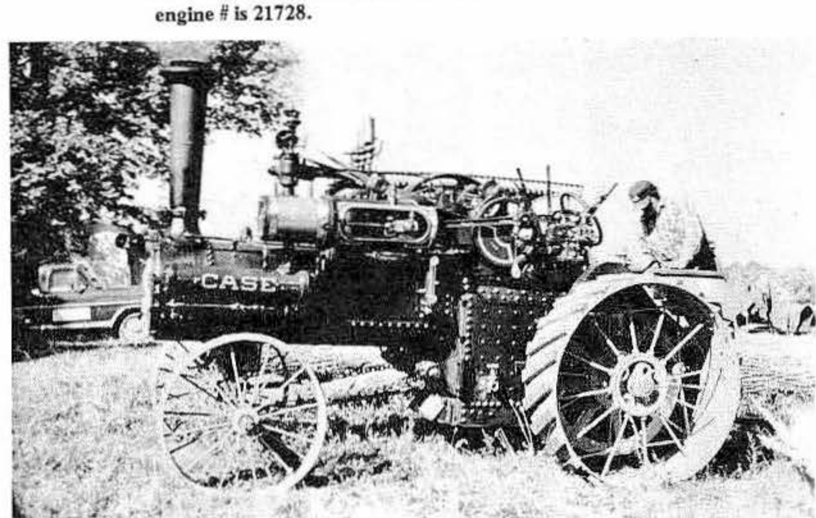
In 1884 an improved traction engine was brought out equipped with differential, hand steering, link reverse and a bar guide engine mounted on a direct flue boiler.

Jerome Case died December 22, 1891.

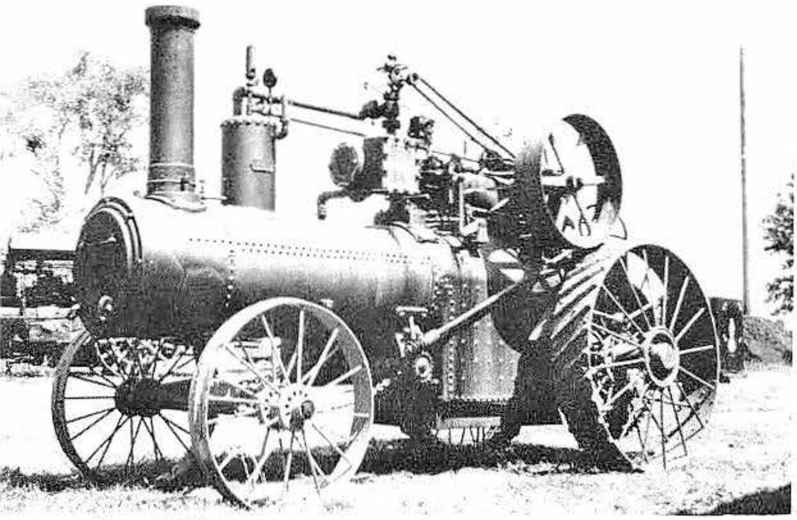
The J. I. Case Co. made the following in the early 1900s: Steam traction engines, simple cylinder and some compounds, 6 to 150 H.P. They made about five 150 H.P. engines, 10-ton road rollers, portable steam farm engines, skid engines and boilers, Case plow tender attachment, mounted and unmounted water tanks, separator feeder and wind stacker, independent swinging stacker, Case recleaner, Clover pea and bean hulling machines, Dingee-Woodbury horse-powers, 10-roll Husker-Shredder, Case Grader, Case Spokane for headed grain, Old Abe tractor gang plows, Case corn shellers, Case baling presses, Case hay fork, Case sweep power baling press, Case road drags, rock crushers, and the Case "40" touring Car.

Today the J. I. Case company is part of Tenneco Inc. The J. I. Case Co. was incorporated on February 21, 1880.

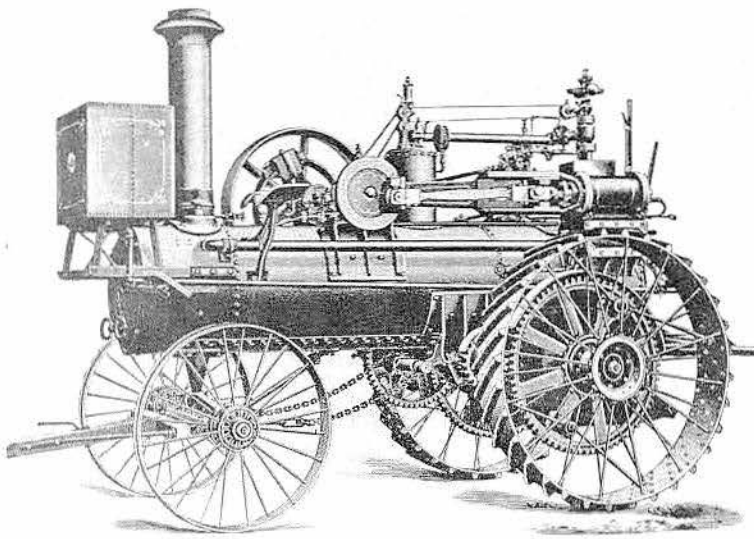
C.E. Christan of Midway, Ohio, owns this 9 H.P. J. I. Case steam traction engine built in 1906 by J. I. Case Co., Racine, Wisconsin. It appears at the Richland County Steam Threshers Assn. show, Mansfield, Ohio. C. E. Christian's 9 H.P. Case engine # is 21728.



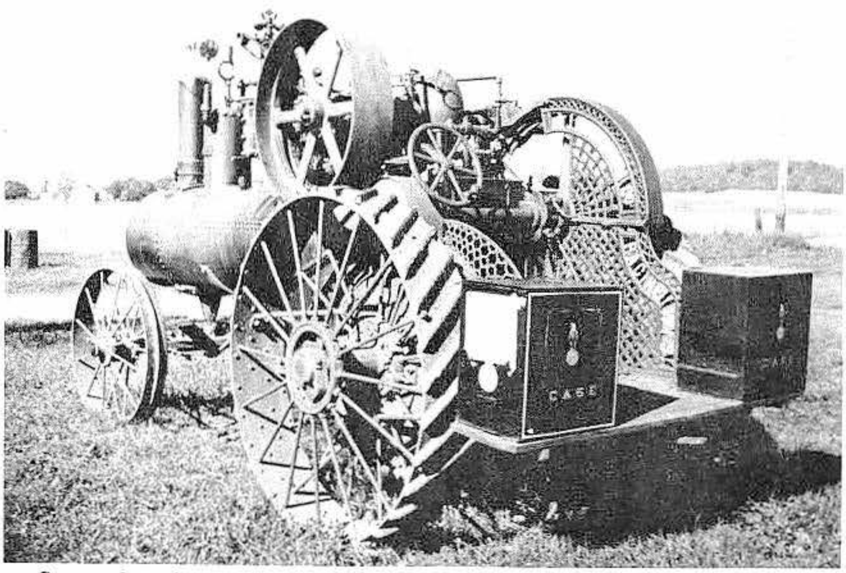
J. I. Case Co.



This 12 H.P. J.I. Case steam traction engine, built in 1894, is owned by James E.B. Zeger of Leola, Pa. It appears at the Rough & Tumble Engineers Historical Assn. show at Kinzer, Pa. The actual brake power, as determined in the testing room, was 36 H.P. The Eagle trademark was adopted in 1865. It was patterned after "Old Abe," a magnificent bald eagle that was used as the mascot of Company "C" in the 8th Wisconsin Regiment and was named after President Lincoln.

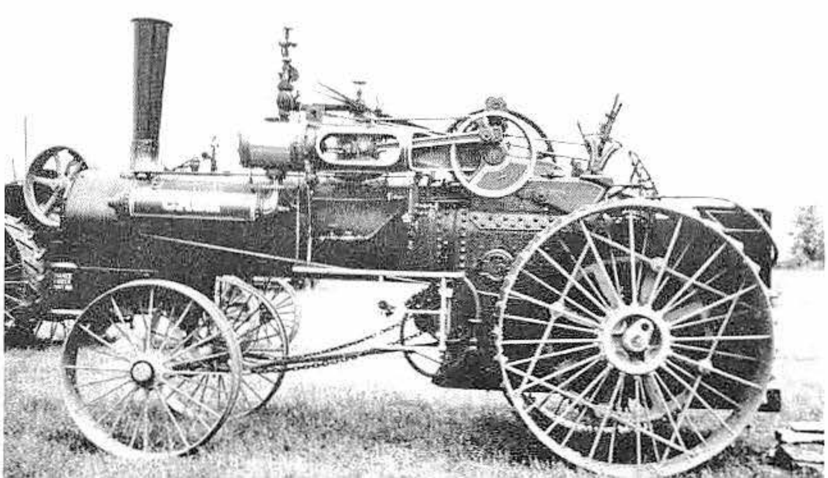


A side crank simple cylinder 10 H.P. J.I. Case steam traction engine was pictured in an 1897 J.I. Case Co. catalog. In this engine the steam, after doing its work, passed directly into the heater, and coming in contact with a series of pipes provided a sure and reliable means of heating the feed water to a high temperature before it entered the boiler. By simply removing the cap to the heater, which could be done while the engine was in motion, access could be had at any time to these pipes.



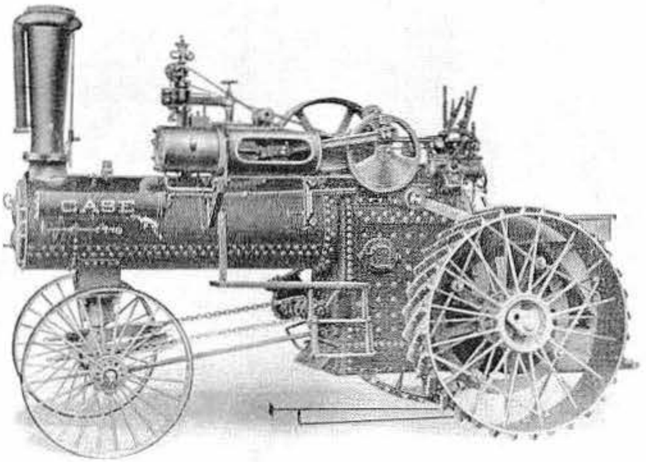
Case used a rather unique grille work on its 12 H.P. steam traction engine built in 1894. This engine is owned by James E.B. Zeger, Leola, Pa.

The speed of virtually all engines was maintained by a governor similar to this one, mounted on a 12 H.P. Case owned by James Zeger of Leola, Pa.

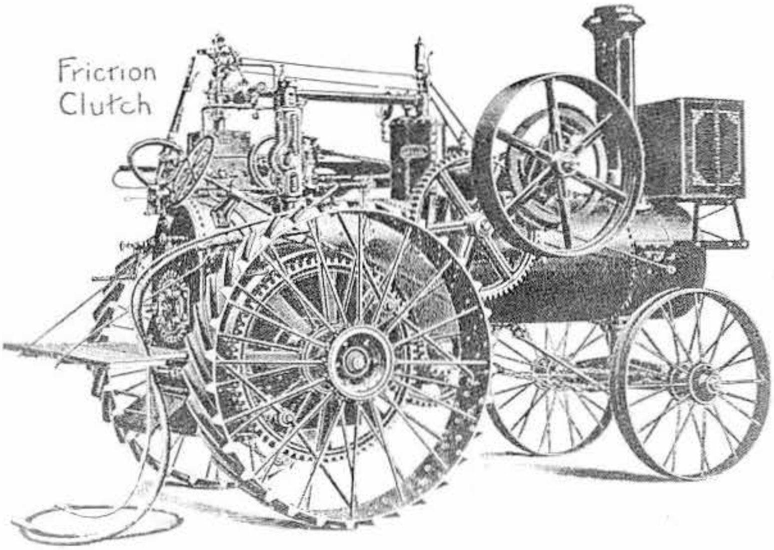


This 12 H.P. J.I. Case steam traction engine, built in 1920, is owned by Harry Woodmansee of Hastings, Michigan. It is seen in action at the Michigan Steam Engine & Threshers show at Mason, Mich.

J. I. Case Co.

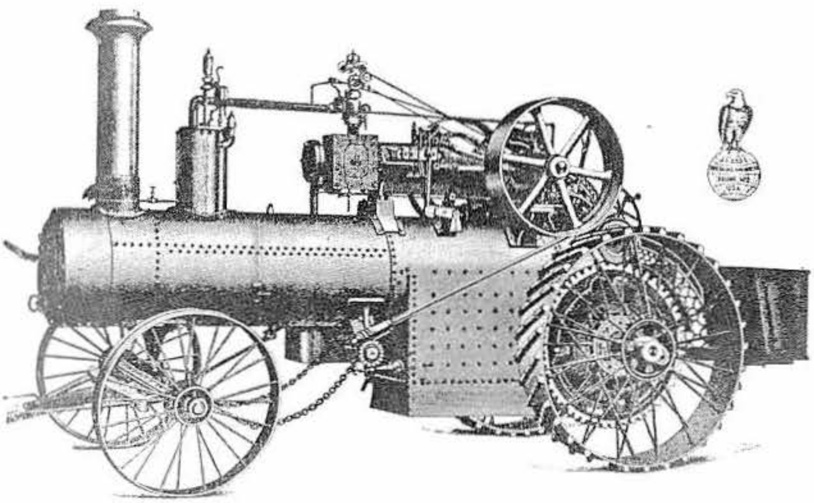


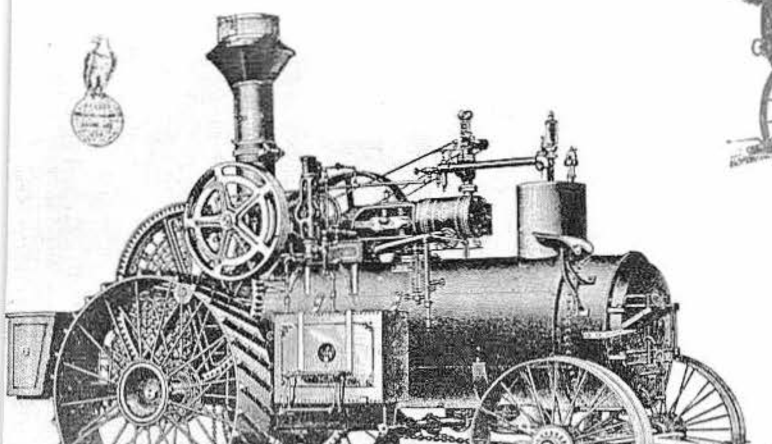
A 1906 J.I. Case Co. catalog shows this engine, a 8¼ x 10-inch cylinder simple, rated at 12 H.P. The actual brake power as determined in the testing room, was 36 H.P. The cylinder dimensions of an engine and the brake tests are the best bases for rating horse power.



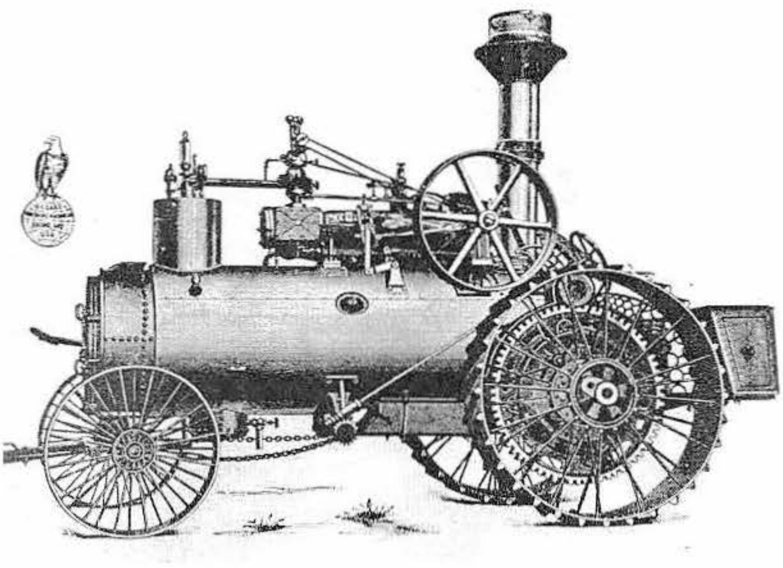
A 12 H.P. Case steam traction engine as pictured in an 1897 J.I. Case Co. catalog. This engine's connecting rods were all made from selected hammered iron of the best quality, accurately fitted with the best form of straps, and boxes with square ends.

A 12 to 16 H.P. Case steam traction engine pictured in a 1897 J.I. Case Co. catalog. With this engine the water was taken from the steel tank on the side of boiler, or from the main water tank, by the independent upright pump and also the American injector on the center crank engines. The independent steam pump would also pump water from the main tank into the steel tank on side.



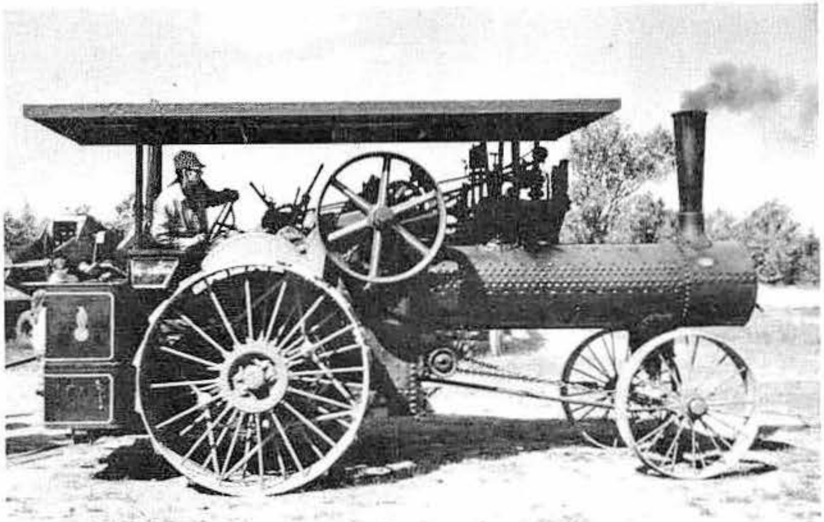


A 12 H.P. Case steam traction engine pictured in an 1897 J.I. Case Co. catalog. This is a return flue simple straw burning engine. It had six hand holes for cleaning. A large mud drum was so placed beneath the boiler as to receive all the sediment and mud, which was easily discharged by the blow-off valve.



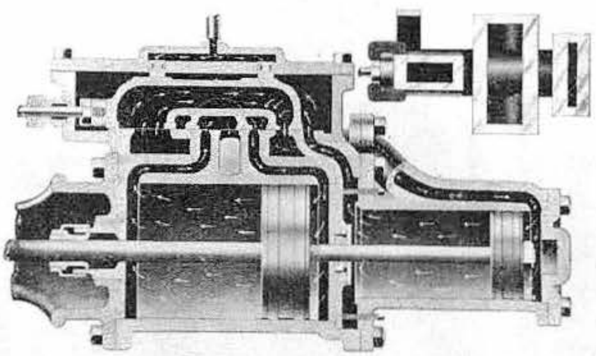
An 1897 return flue simple straw burning 16 H.P. Case steam traction engine. This engine's gear frames, for holding the main axles and cross shafts, were in one casting which was firmly secured to the boiler by bolts passing through the extension of boiler projecting beyond the back of rear head.

J. I. Case Co.

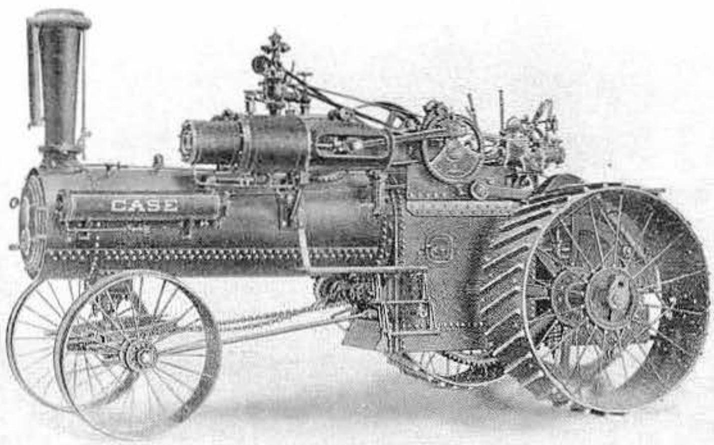


This 18 H.P. Case steam traction engine, built in 1917, is owned by Mrs. Verl Malone of Shelby, Ohio. It is in action at the Richland County Steam Threshers Assn. show at Mansfield, Ohio.

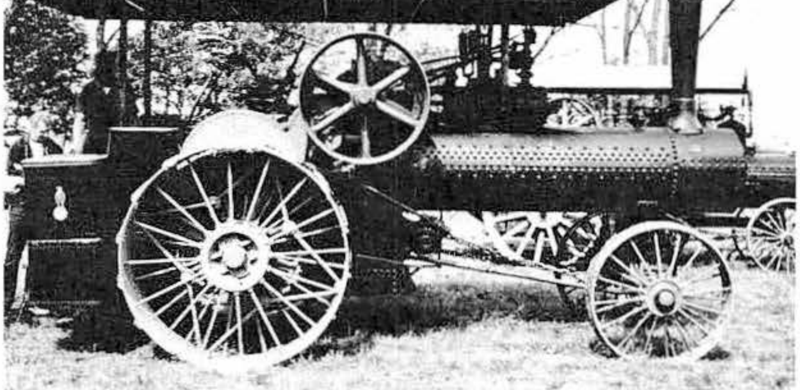
This is a good example of how flues are cleaned on an 18 H.P. Case steam engine. Built in 1917, this engine is owned by Mrs. Verl Malone of Shelby, Ohio.



An internal view of the J.I. Case Compounded cylinder and valve, shows that the valve was a single casting and performed all valve functions for both cylinders. In setting, the central section pertaining to the large cylinder was treated as if it were on a simple cylinder, and adjusted accordingly. The valve was held to its seat when the engine was running down hill, or without a load, by plunger pistons located in the steam chest cover. The high pressure steam, entering from the valve seat, had access to a limited area on the face of the valve. This counteracted or relieved the pressure of the steam on its back. When the engine was working, the valve was balanced without the addition of a single piece or complication of any sort.

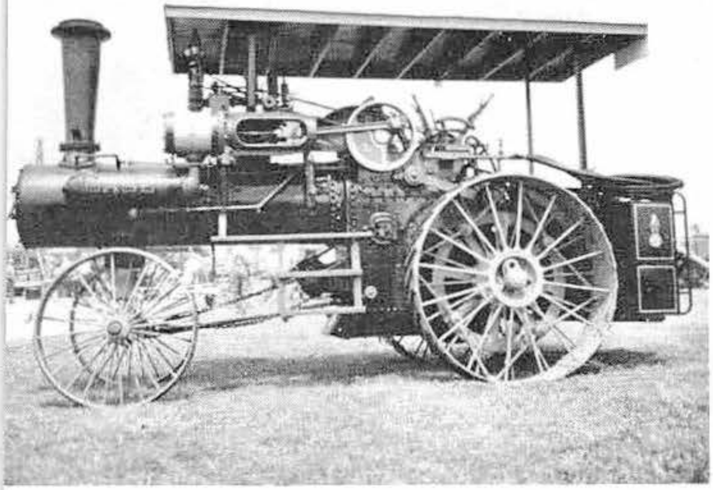


A 25 H.P. Case Compound steam traction engine was pictured in a 1906 J.I. Case Co. catalog. In the Case compounded engine all the advantages were derived from double expansion of steam. Cylinder condensation was lessened and the maximum economy was realized with the simplest possible mechanism. The gain in power would depend on the conditions under which the comparison was made. The gain was not, however, dependent on the use of excessively high pressure of steam. The compound was limited to 130 pounds pressure, the same as in the simples. The cylinders were brought so close together that a single head or partition between them served for both. Where the piston rod passed through this partition, exceedingly durable and self adjusting metallic packing was used. The steam chest was not a receptacle for steam from the boiler, but received the exhaust from the small cylinder for distribution. this engine sold new for $2,050. It had a 9¼ x 13 x 11-inch cylinder.



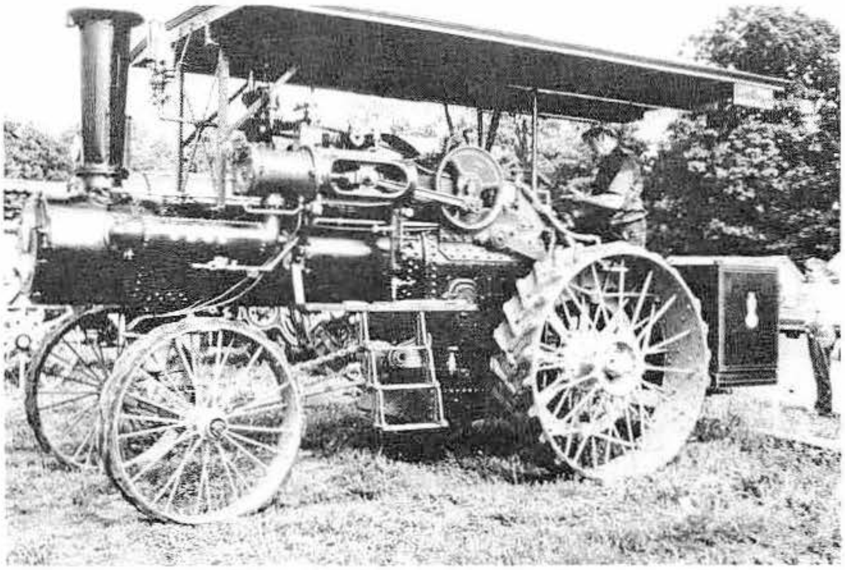
This 20 H.P. Case steam traction engine, built in 1923, is owned by Glenn Fullerton of Burgettstown, Pa. It is in action at the Stumptown steam Threshers Assn. meet at New Athens, Ohio.

J. I. Case Co.



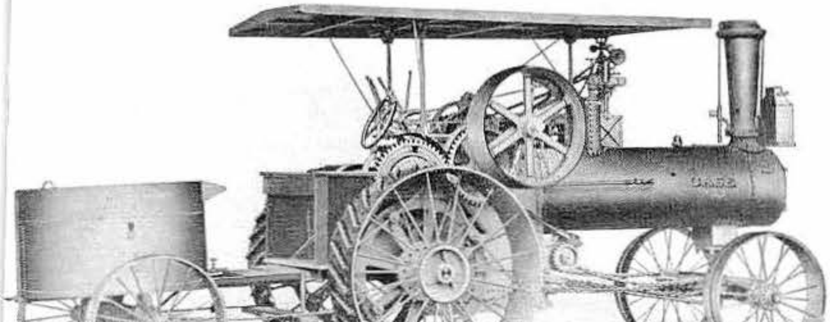
This 36 H.P. J. I. Case steam traction engine, built in 1911, is owned by Wendell Bintrim of Harmony, Pa. It is in action at the Northwestern Pennsylvania Steam Engine & Old Equipment Assn. show at Portersville, Pa.

A fair share of American steam traction engines wound up being exported to other countries. One such unit was this 20 H.P. J.I. Case engine which for many years was employed in the rolling farm lands of southern France. The well-restored engine today is on display at the Motor Museum at Rochetaille, Saune, France. It is equipped with a half-canopy, which protects the operator, but not the engine, from rain.



This 36 H.P. Case steam traction engine, built in 1911, is owned by John Pion of Conington, Pa. It is at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa.

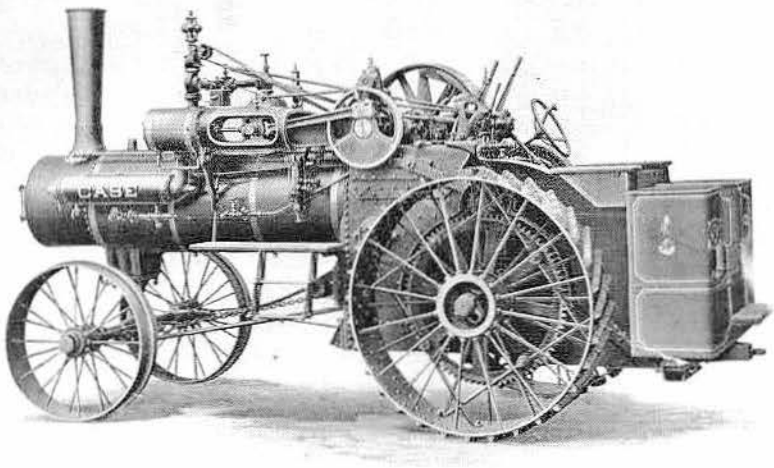
This 20 H.P. Case is pulling the 1906 Case two wheel tender. The water capacity of the tender tank was eight barrels and the hopper on top would carry one-half ton of fuel. A straw rack could be placed on top of the tank on special order. It was very convenient on the road and readily guided with the engine either forward or backward. Canopy tops were furnished in 8 and 11-foot lengths, 6-feet in width. They were a protection to the operator and to the working parts of the engine. For $7 additional the company supplied one of the celebrated Ham headlights, shown in front of the smoke stack. This gave a powerful light and the flame did not extinguish on rough roads. The short engine cab sold for $25 and the full length model sold for $40. The 8-barrel engine tender tank sold for $85. The 8-barrel engine tender with straw rack sold for $100.



This 40 H.P. Case steam traction engine, built in 1913, is owned by Bill Sclarow, Line Lexington, Pa., and is at the Americana Shoppe in Line Lexington.

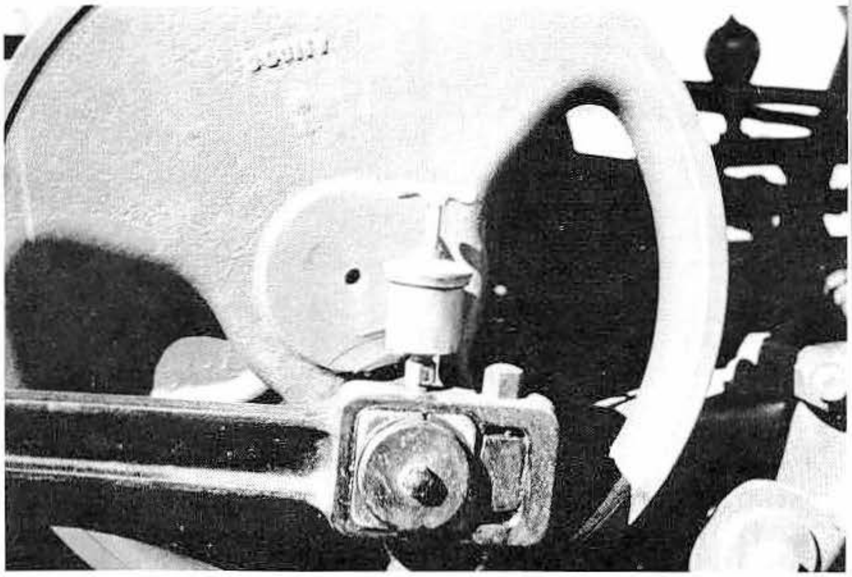
J. I. Case Co.

A 40 H.P. Case steam traction engine built in 1920, owned by Samuel Kriebel of Lancaster, Pa., is seen in action at the Rough & Tumble Engineers Historical Assn. show at Kinzer, Pa.

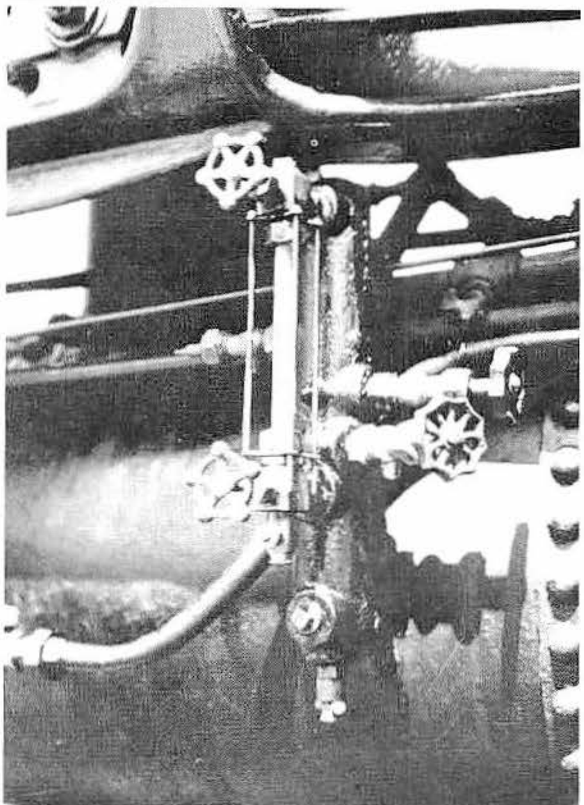


A 40 H.P. Case steam traction engine mounting a 8¼ x 10-inch simple cylinder. The complete price as shown here was $1,550 F.O.B., Racine, Wis. Furnished on special order at extra price were contractor's fuel bunkers, rocking grates, jacketed boiler if a coal burner, canopy, headlight, extension rims, compounded cylinders and straw burner attachment.

This is an ordinary grease cup. It is operated by a thumb screw. In general it may be said that greases are not as good lubricants as liquid oils, a fact which has been proven by many careful scientific tests. Its ease of application, however, and its cleanliness more than compensate for the slight difference in lubricating qualities, especially for such places as the crank pin, cross head pin and other moving parts of machinery.

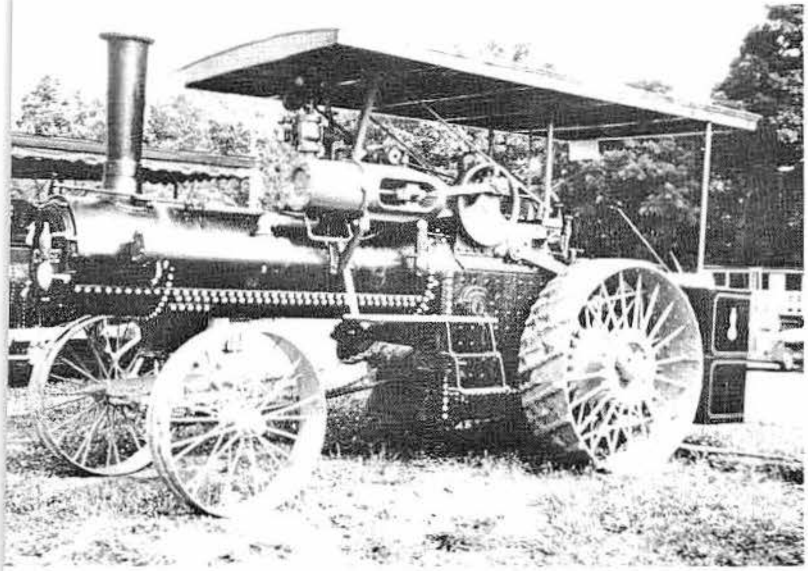


A Case engine's water glass. When running, the engineer tries to keep water at least an inch above the crown sheet for safety. There are five safety devices usually found on every steam traction engine boiler. They are a steam gauge, a safety valve, a water gauge glass, a fusible plug and try cocks. Apart from general driving, safe steam engine usage and maintenance cannot be over-emphasized.

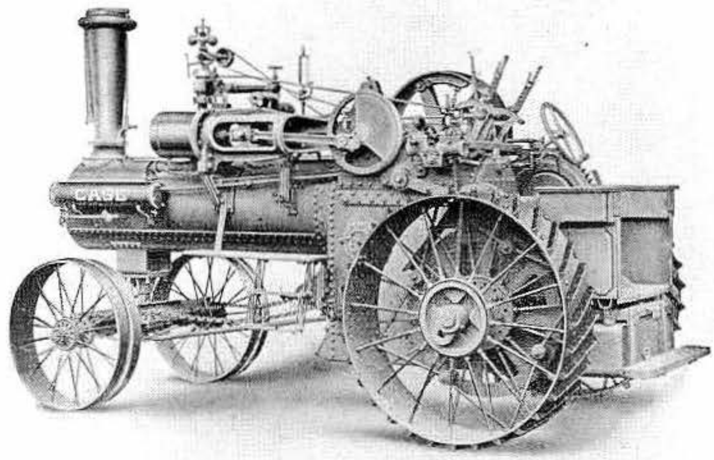


This 45 H.P. Case steam traction engine built in 1909, is owned by R. L. Beekman of Ft. Lauderdale, Fla., and is on display at the Gold Coast Railroad, Ft. Lauderdale. J. I. Case Co. of Racine, made 35,838 steam traction engines. They stopped building these engines in 1924.

J. I. Case Co.

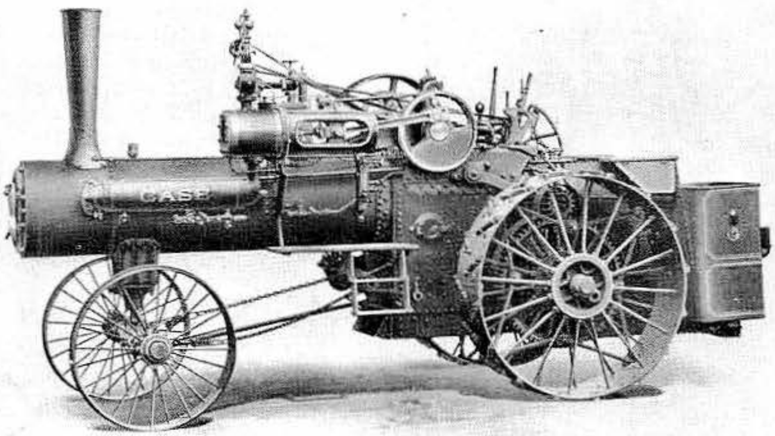


This 45 H.P. Case steam traction engine, built in 1907, is owned by Arthur Stone of Silver Spring, Md. It is at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa.



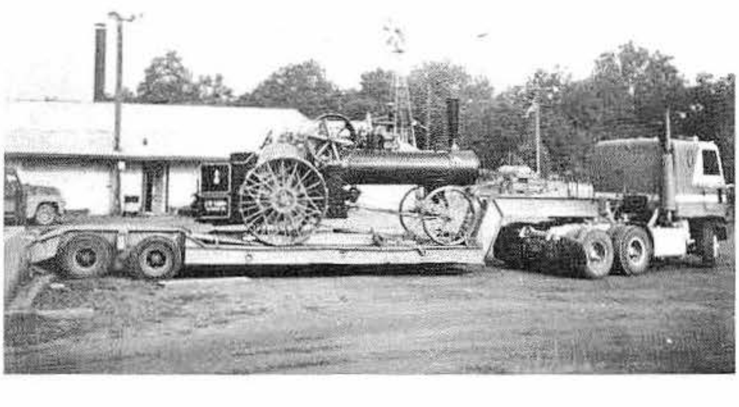
A 45 H.P. Case steam traction engine, with a 9 x 10-inch simple cylinder, as illustrated in a 1906 J. I. Case Co. catalog. This was an ideal engine for threshing purposes, for driving the Case husker-shredder, saw-mills, rock crushers and road graders. They rated it at 15 H.P. but under the brake it developed 45 H.P.

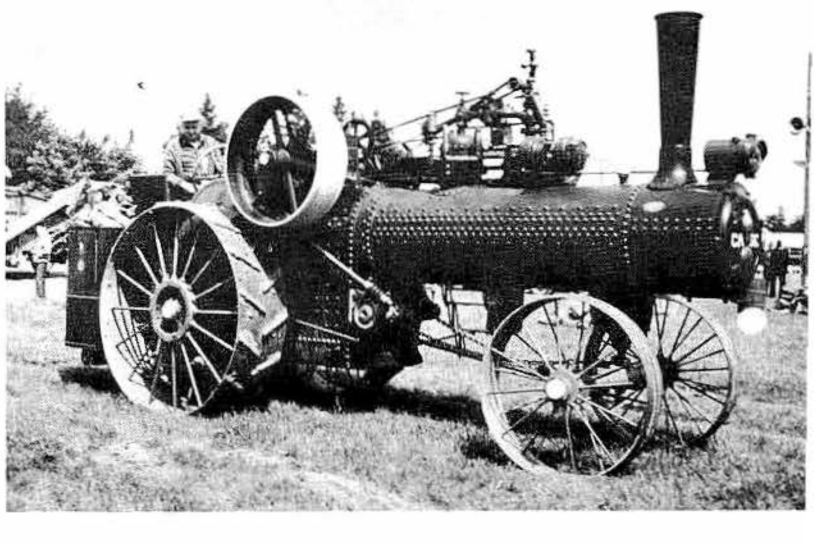
A 50 H.P. Case steam traction engine with a 9 x 10-inch simple cylinder. This engine's flywheel was 40 inches in diameter; its face was 12 inches; and its speed was 250 R.P.M. This engine sold for $1,755 complete.



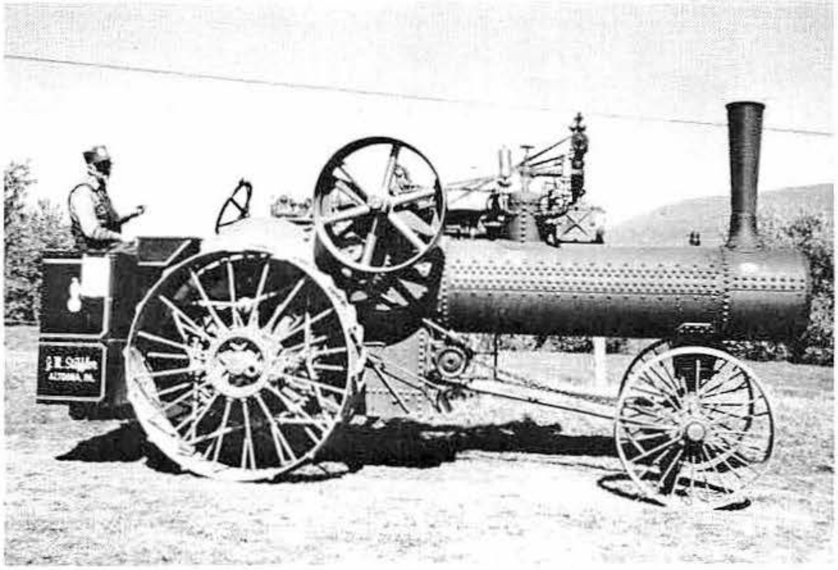
A 50 H.P. Case steam traction engine, built in 1916, is being trucked to the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa. The truck plays a vital part in transporting the steam traction engines to and from the steam shows. The trucking industry and its drivers are to be thanked for their help and professional hauling supervision.

This 50 H.P. Case steam traction engine, built in 1917, is owned by Bernard Porter of Woodstock, Ontario. It is at the Norwich and District Historical Society show, Norwich, Ontario.



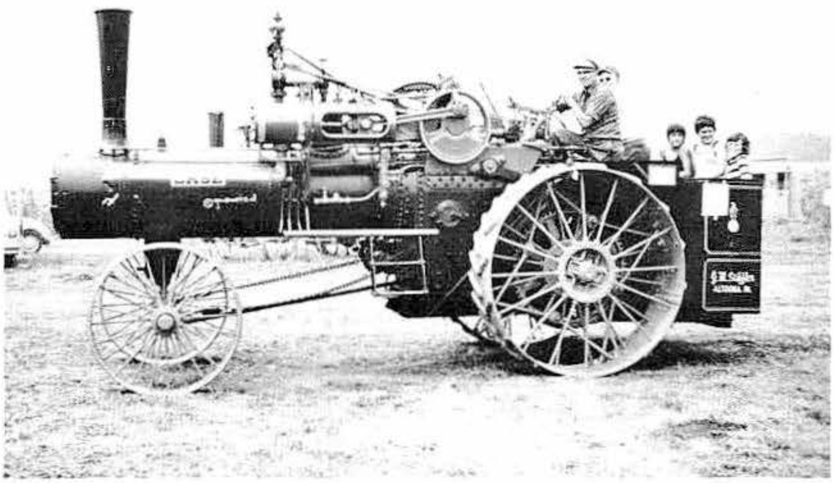


J. I. Case Co.



This 50 H.P. Case steam traction engine, built in 1916, is owned by J. M. Stiffler of Altoon, Pa. It is in action at the Morrison Cove Pioneer Power Reunion, Martinsburg, Pa.

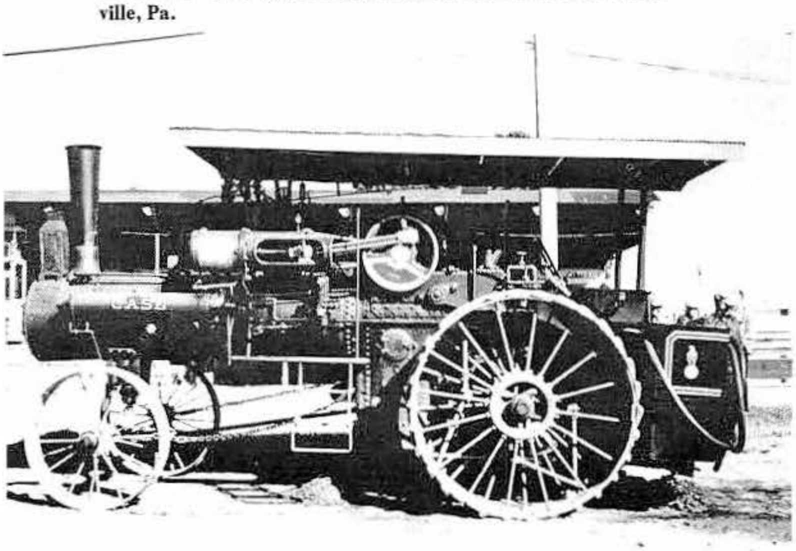
This 50 Horsepower Case steam traction was also built in 1915. Today it is owned by Earl Smith of Dundee, Florida, and is on display at Yesterday Museum in Dundee. Giving a good indication of the size of the drive wheels on this unit are the author's father and mother, Oscar and Ann Norbeck, now of Fort Lauderdale, Fla.

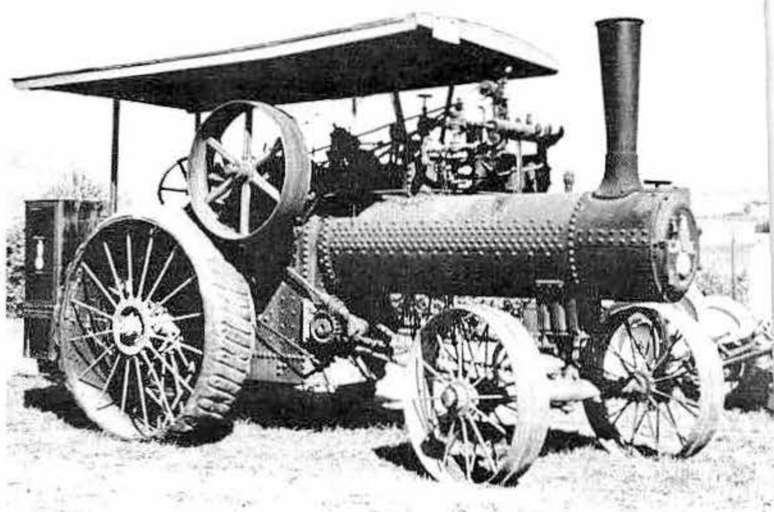


J. M. Stiffler's 50 H.P. Case engine, built in 1916, is seen in action at the Rough & Tumble Engineers Historical Assn. show at Kinzer, Pa. A picture of J. M. Stiffler's Case was used on the front cover of Model Engineer, June, 1972. The magazine is published in England.

This 50 H.P. Case steam traction engine is owned by M. F. Clouse of Waterside, Pa. It is displayed at the Morrison's Cove Pioneer Power Reunion show at Martinsburg, Pa. The Case steam traction engine used black for the boiler and smokestack, ground wheels were red, and the roof was green, as were the dome, cylinder and flywheel.

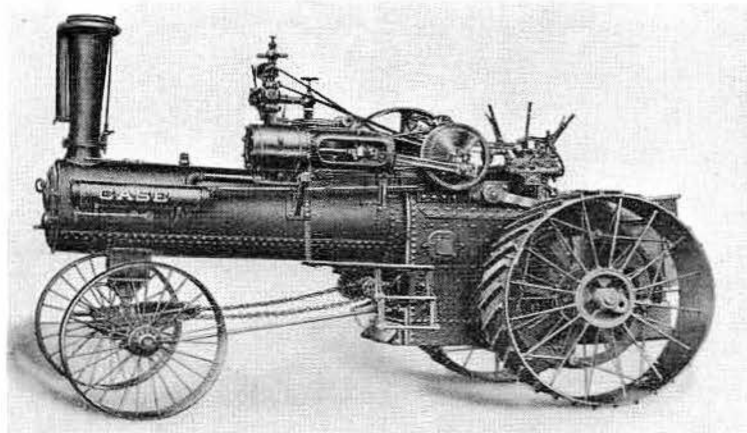
This 50 H.P. Case steam traction engine, built in 1915, is owned by Charles McMurray of Slipper Rock, Pa. It is at the Pioneer Steam and Gas Engine Society of Northwest Pa. show at Meadville, Pa.





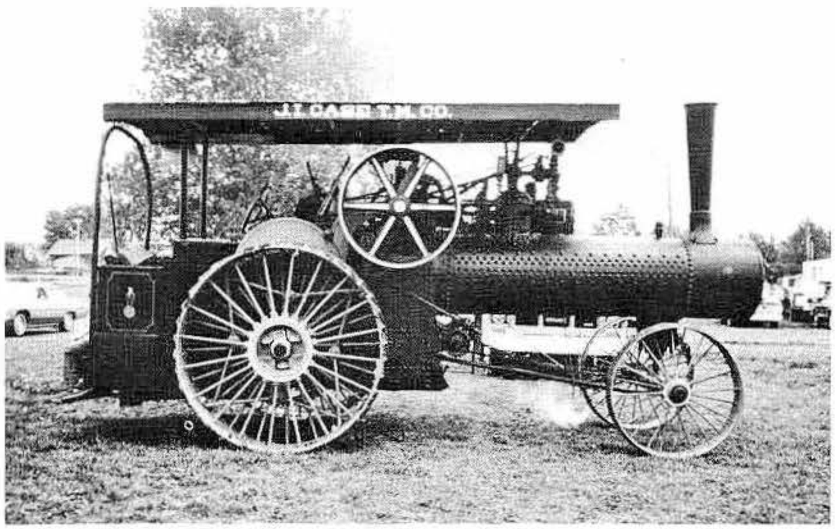
J. I. Case Co.

This 50 H.P. Case steam traction engine, built in 1920, is owned by Wallace Freeman of Cadiz, Ky. It is displayed at the Tennessee-Kentucky Threshermen's Assn. show in Adams, Tenn.

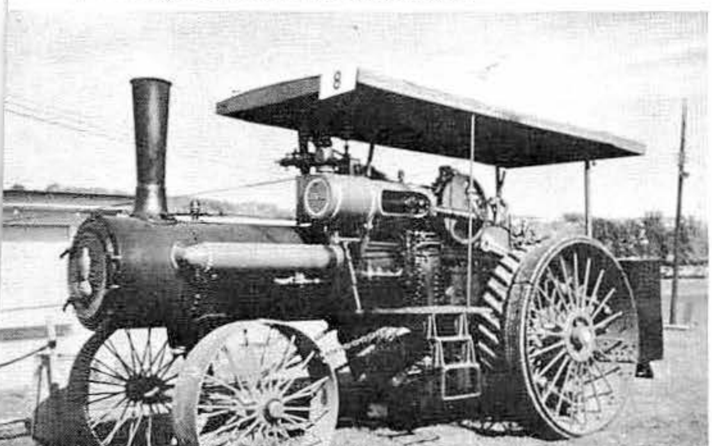


The 60 H.P. Case steam traction engine used a 10 x 10-inch simple cylinder. This 1906 engine was an ideal contractor's engine and was recommended for railway contractors and for grading work. The tank had a capacity of 260 gallons of water and 1,250 pounds of coal.

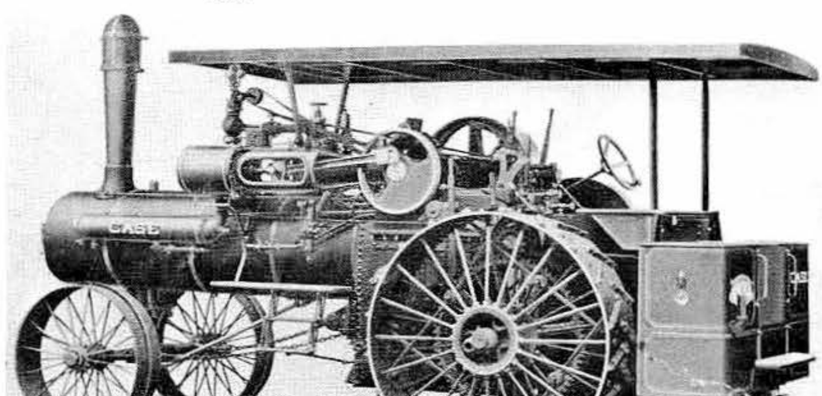
This 65 H.P. Case steam traction engine is owned by Carl Marhofer of Baltic, Ohio. It is in action at the Tuscarawas Valley Pioneer Power Assn. show, at Dover, Ohio.



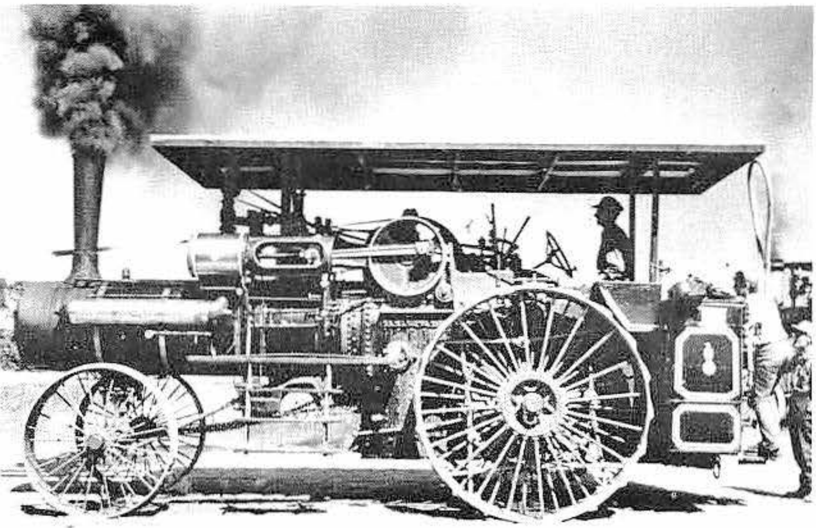
This 65 H.P. Case steam traction engine, built in 1923, is owned by Robert Kelly of Midway, Pa. It is at the Tri-State Historical Steam Engine Assn. show at Hookstown, Pa.



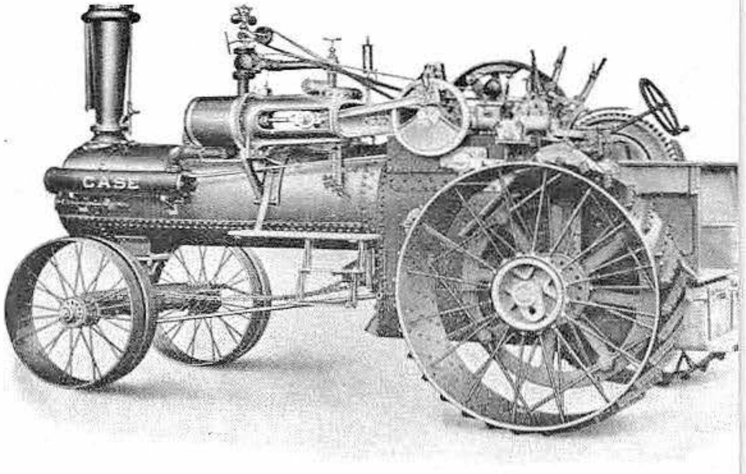
The 65 H.P. Case steam traction engine had a simple 10 x 11-inch cylinder. This engine sold complete for $2,190. Its front wheels were 48 inches high; tires were 12 inches wide, regular, or 18 inches extra price. The traction wheels were 6 feet high; tires were 22 inches wide, with 8 or 12-inch extension rims at extra cost.



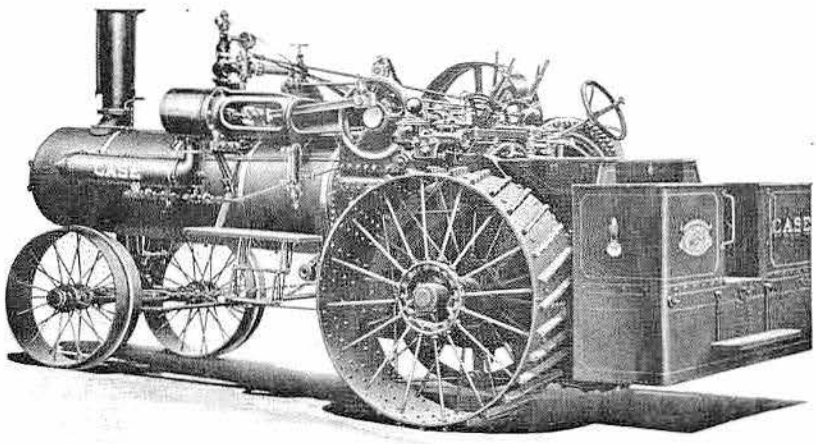
J. I. Case Co.



This 65 H.P. Case steam traction engine, built in 1914, is owned by Fred Smith & Son of Johnstown, Ohio. It is at the Richland County Steam Threshers Assn. show at Mansfield, Ohio.



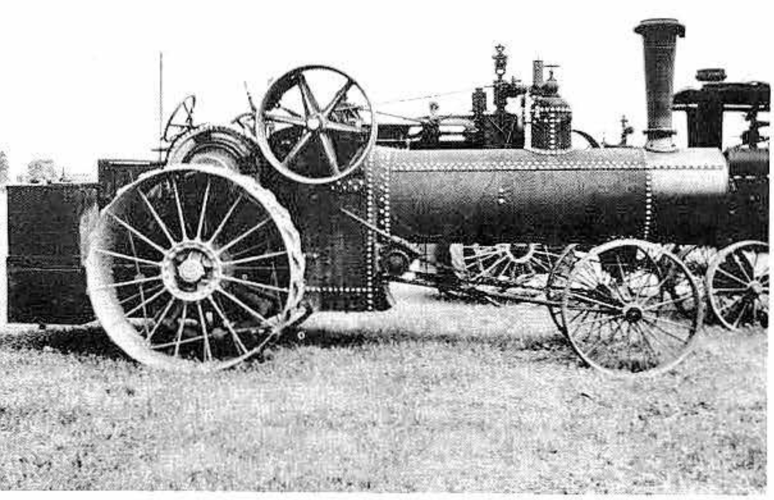
The 1906 75 H.P. Case steam traction engine had an 11 x 11-inch cylinder. This was a good freighting engine, and, with the Case plow tender, would plow from 30 to 40 acres per day easily. When specially ordered, this engine was equipped with the two-speed gear and friction steering device. The slow speed would run the engine at 2.55 MPH, the fast speed 5.76 miles and engine was guided at will by slight pressure on a lever.

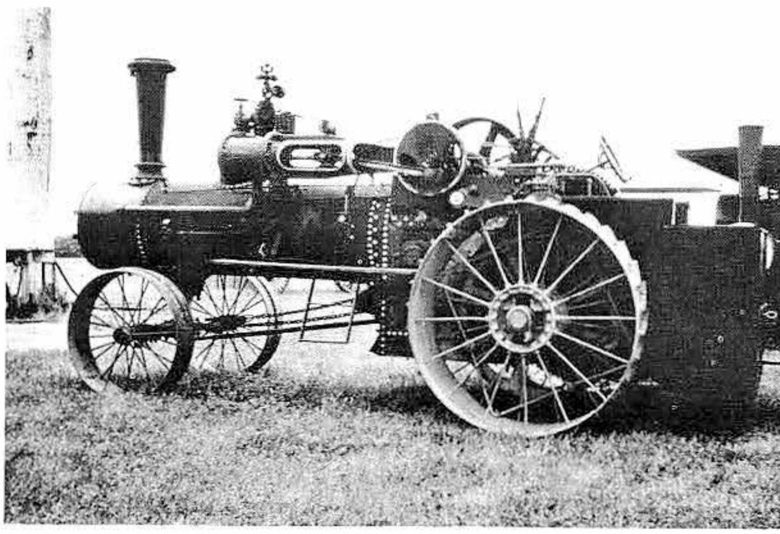


The 75 H.P. Case steam traction engine had an 11 x 11-inch simple cylinder. The weight, with the boiler empty, was 20,440 lbs. This engine sold complete for $2,250 F.O.B., Racine, Wis.

This 75 H.P. Case steam traction engine, built in 1910, is owned by L. Blough of Charkville, Mich. It is at the Michigan Steam Engine & Threshers show at Mason, Michigan.

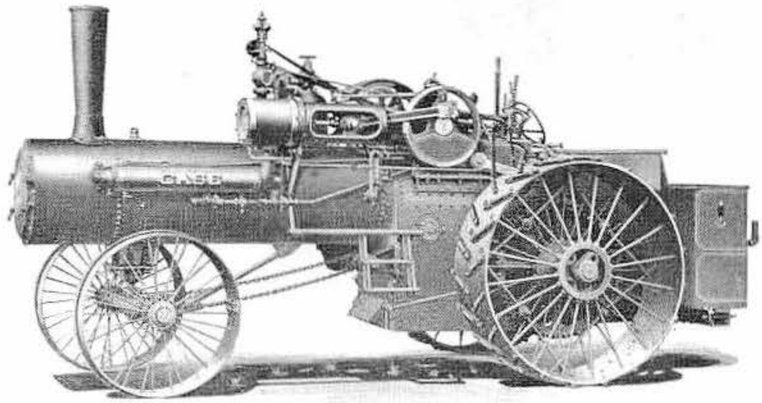
This is the cylinder side of the 75 H.P. Case owned by L. Blough of Charkville, Mich.





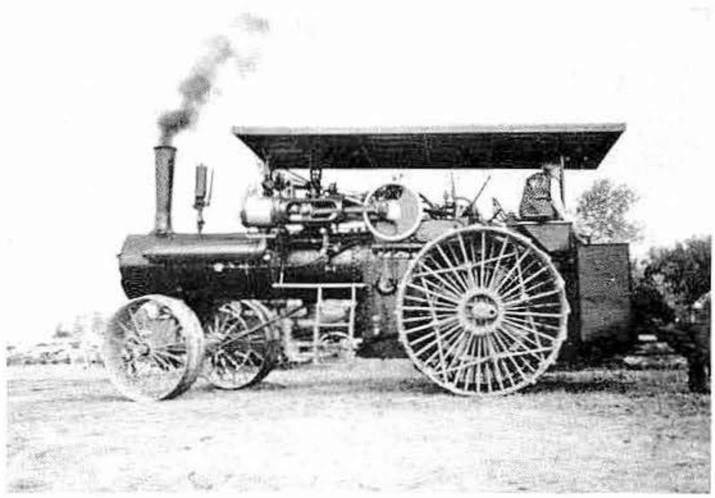
J. I. Case Co.

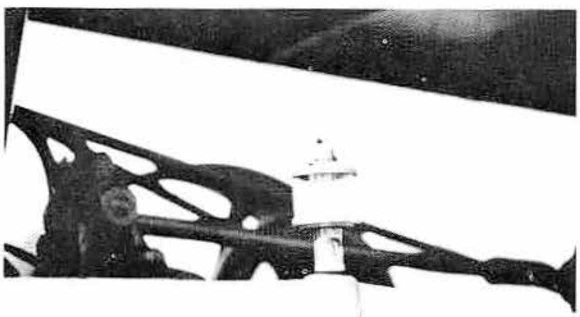
This 75 H.P. Case steam traction engine, built in 1925, is owned by Midwest Old Settlers & Threshers Assn. of Mount Pleasant, Iowa.

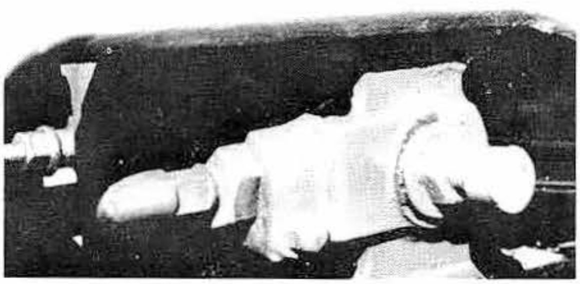


Fitted with an 11 x 11-inch simple cylinder, this 80 H.P. Case steam traction engine had a working steam pressure of 150 pounds per square inch. This engine sold complete for $2,350 F.O.B., Racine, Wisconsin.

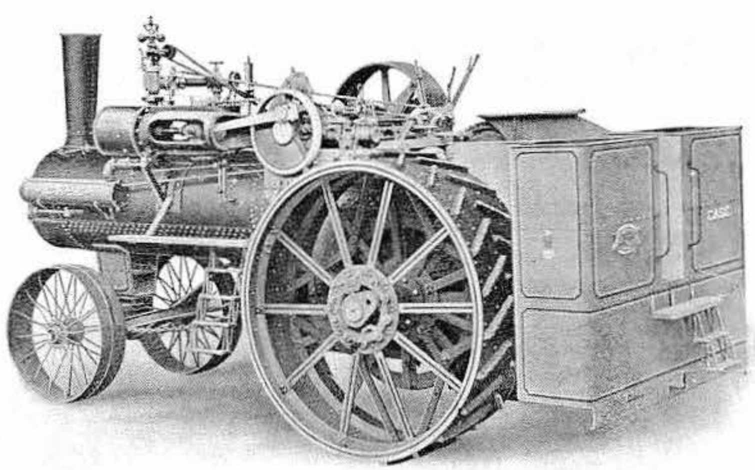
This 80 H.P. Case steam traction engine, built in 1920, is owned by the Erdle Brothers of Canandaigua, N.Y. It is at the New York Steam Engine Assn. show at Canandaigua.



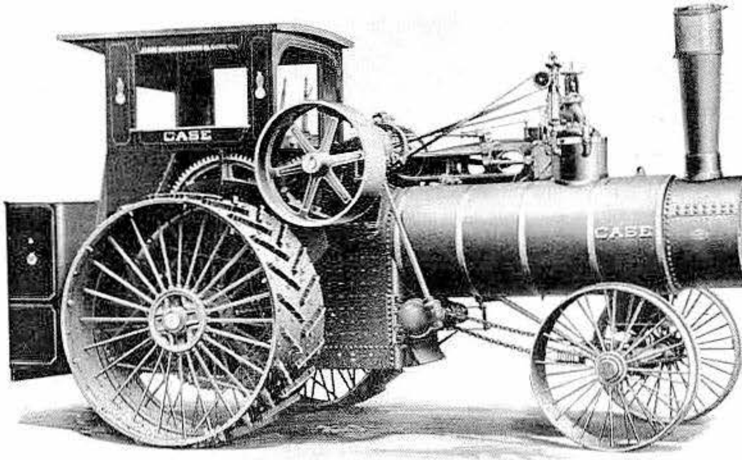




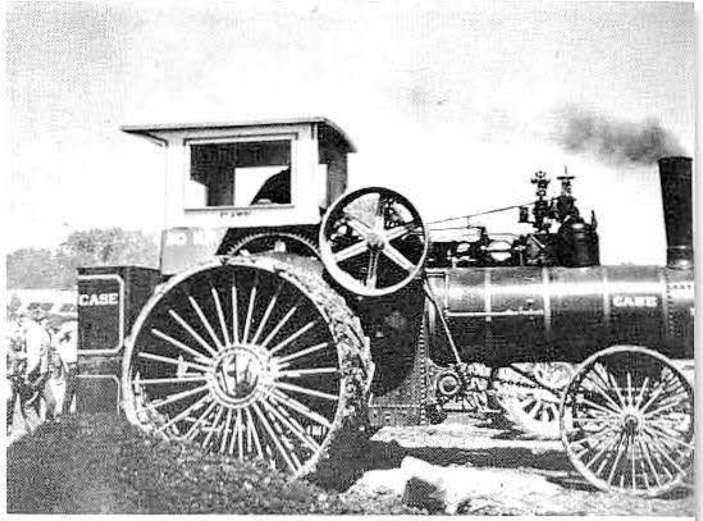
This is a simple ordinary sight feed oiler used by J. I. Case in 1920. The oil is contained in a glass reservoir which has ground ends and is made oil tight by means of gaskets at the top and bottom. The cover is screwed down on a central tube extending up through the reservoir. The bottom of this tube is provided with a valve seat for a needle valve. This needle valve extends up through the tube and is provided with a cross bar or eccentric lever where with it may be raised from its seat. It is held down normally by a small spiral spring in the upper part of the tube. A thumb nut at the top may be raised or lowered, thus, increasing or decreasing the distance the needle valve moves from its seat and so regulating the flow of oil. A sight feed glass below the reservoir shows how much oil is being delivered. If oil rises in this glass it shows that the opening below is obstructed and needs cleaning out.



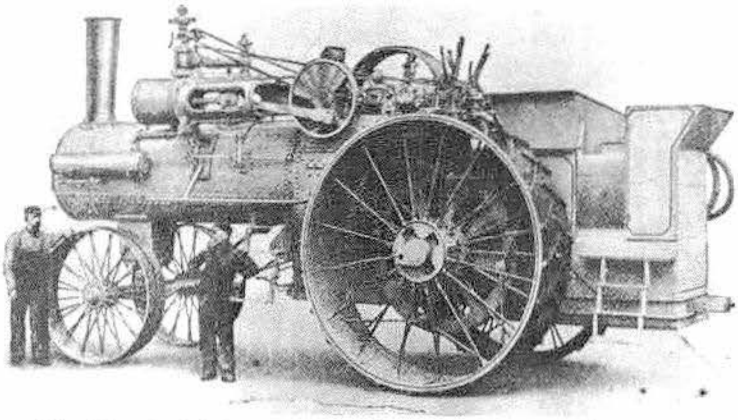
Built in 1906, this 110 H.P. Case steam traction engine used a simple 12 x 12-inch cylinder. It is a general purpose engine designed for heavy plowing, threshing, freighting; in fact, for all kind of work necessitating a large amount of horse-power. This engine had a friction steering mechanism that was driven from the crank shaft. The front wheels would turn when the rear wheels were stationary. This made it easy to turn the engine around very sharp corners.



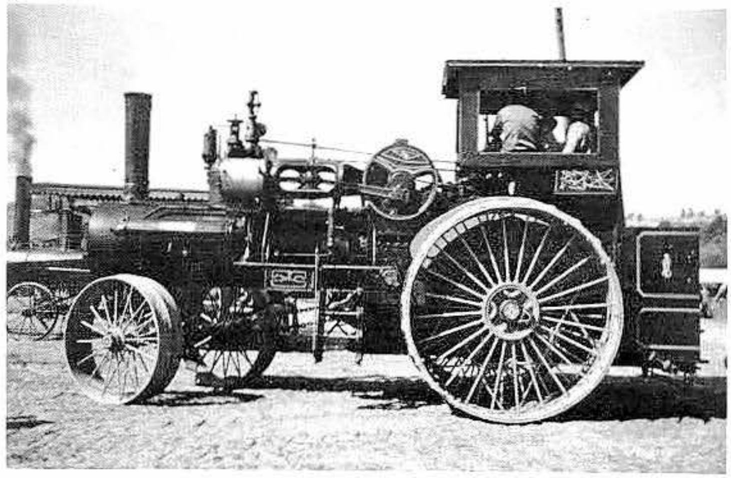
A 110 H.P. Case steam traction engine with a 12 x 12-inch simple cylinder. Special attachments were locomotive cab, extension rims, and straw burner. This engine sold as pictured for $2,400.



This 110 H.P. Case steam traction engine, built in 1910, is owned by Midwest Old Settlers & Threshers Assn. of Mount Pleasant, Iowa. This engine stands 15 feet tall and weighs 18 tons. The rear wheels are 7 feet in diameter and the tires are 3 feet wide. The front wheels have a 4½-foot diameter, with tires 16 inches wide. Normal speed is 2.37 miles per hour. Next to the largest of the Case steam traction engine family, it was originally designed for big farms and ranches where 10 to 12 bottom gang plows were used and where team operations were out of the question. The 110 H.P. filled the requirements on the wide open prairies to get work done quickly and economically. Constructed according to the laws of the Canadian provinces, it began its life on the wheat fields of western Canada. For a number of years, it was used at a Canadian service station as a fuel oil tank. When Mr. Hingtgen purchased the engine and brought it to Iowa, he used the engine to operate the sawmill he owned in LaMotte, Iowa.

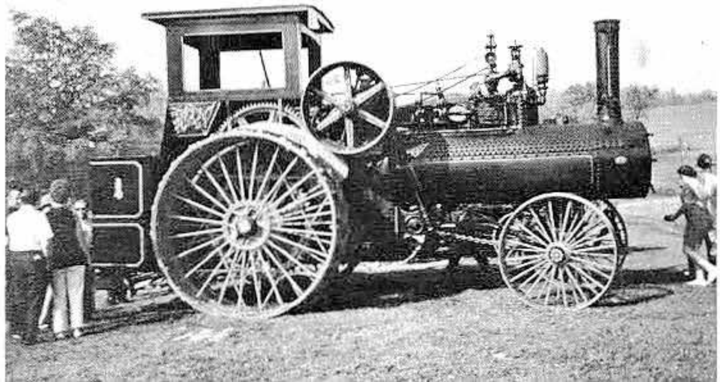


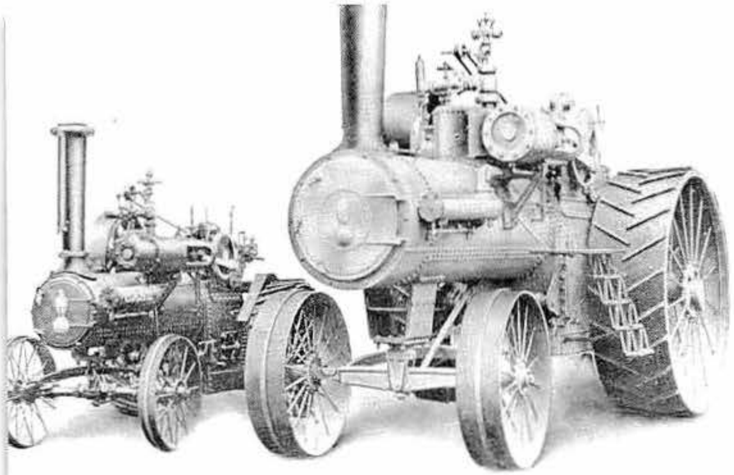
This 150 H.P. J. I. Case steam traction engine was shown in a 1905 catalog. J. I. Case built nine of these giants. They were used for ore hauling and heavy draw bar work. The first 150 H.P. Road Locomotive, #14666, was built in 1904 and went to the Sater Copper Mining Co. at Folsom, New Mexico. The second one, #17162, was built in 1906, with no record where it was shipped. The next three, #18547, #18548, and #18549, were built in 1907 and shipped to the branch at Brunswick, Georgia. The next one, #18723, also built in 1907, went to Louisville, Kentucky; #18848 went to Watertown, New York; #18870 went to Waubun, Minnesota, and #18871 went to Tomahawk, Wisconsin. These last 3 were also built in 1907, which ended the production. The engine at Tomahawk was owned by a man named Bradley and he threshed with it. It got out of the country in the 1920s. The one in New York was owned by two young men hauling building stone from a quarry in 5 wagons, each hauling 10 tons of stone. Two of these engines were re-shipped to Kansas in 1906 and early 1907. One went to Colby, and the other to Leoti. As was previously stated, it is not known where the 1906 engine went, but it had to be Colby or Leoti. There the engines pulled 16 bottom plows, breaking the buffalo grass sod of Western Kansas. The two-speed set up of the gears would not hold up under the terrific power thrust of the 14 x 14-inch cylinder, although the engine steamed and handled easily. These were eventually shipped back to the factory at Racine, Wisconsin. The "Sample" 150 H.P. engine sold for $3,600 in 1904. The price was raised to $4,000 in late 1905. The first 150 H.P. J. I. Case traction engine was called a "Sample" engine. It was an experimental. The rest were called Road Locomotives.



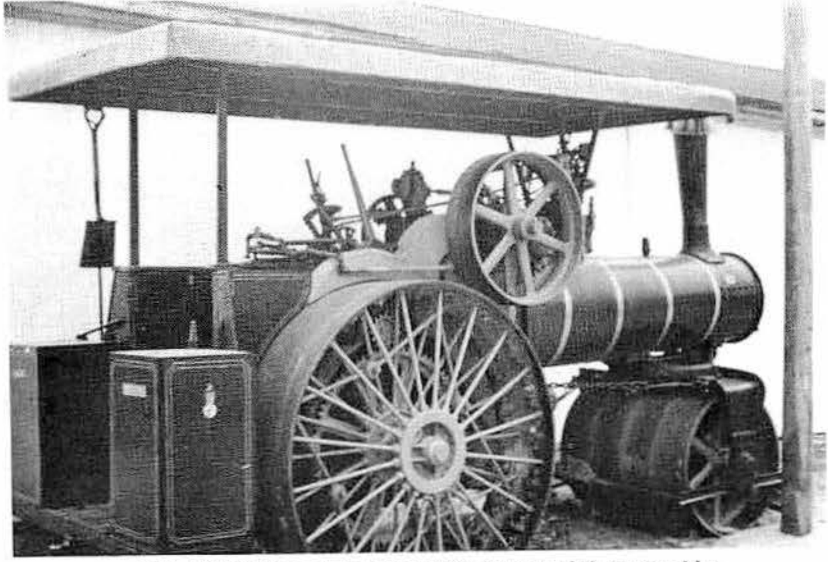
This 110 H.P. Case steam traction engine, built in 1912, is owned by Willis Abel of Finleyville, Pa. It is at the Tri-State Historical Steam Engine Assn. show at Hookstown, Pa. In 1876 Case developed a steam traction engine and was awarded a gold medal for excellence at the Centennial Exposition in Philadelphia, Pa.

Another view of the 110 H.P. J. I. Case steam traction engine built in 1912 and owned by Willis Abel of Finleyville, Pa. J. I. Case Co. built a total of 35,838 steam traction engines. In 1876, the first year of building steam traction engines, they built 75 engines. In 1900 they built a total of 1,032 engines. Then in 1911, a record of 2,322 engines were built. The last year Case produced steam traction engines was 1924, with only 132 engines being built.

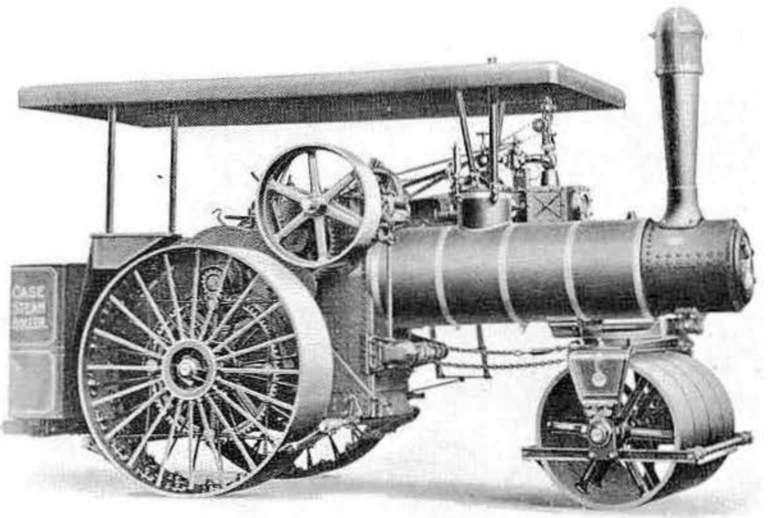




The 150 H.P. J. I. Case steam traction engine had a 14 x 14-inch cylinder. This picture was taken from a 1906 catalog. Today there are no engines of this type left. It was the biggest that J. I. Case built. The engine's weight, with the boiler empty, was 18 tons. It was designed for heavy hauling, such as ore from mines or lumber or general freighting by wagon trains with loads of 40 to 50 tons up a grade of 10 per cent. It had a friction steering mechanism which operated mechanically when the engine was running. It was rated at 40–150 H.P. The cylinder was simple, with a Wolf reverse. The fire box was 58¼ inches in length, 39¼ inches wide, and 45½ inches high. The diameter of the barrel was 42 inches. There were 93 flues, 2 inches in diameter and 108½ inches long. The grate area was 15.8 square feet with a heating surface of 508.2 square feet. It was designed for a steam pressure of 160 pounds per square inch. It had a 2-speed arrangement of 5.69 miles per hour in high and 2.64 miles per hour in low, at a flywheel speed of 200 R.P.M. The flywheel was 50 inches in diameter with a 16-inch face. The rear wheels were 8 ft. in diameter with a 30-inch face. The front wheels were 54 inches in diameter with a 14-inch face. The width of the engine was 10 feet, with 170 inches between axles. The length of the engine was 25 feet, 3 inches. The engine had a reserve water supply of 500 gallons and a coal bunker that held 1,200 pounds of coal. This was enough fuel and water to run the engine for 3 hours.

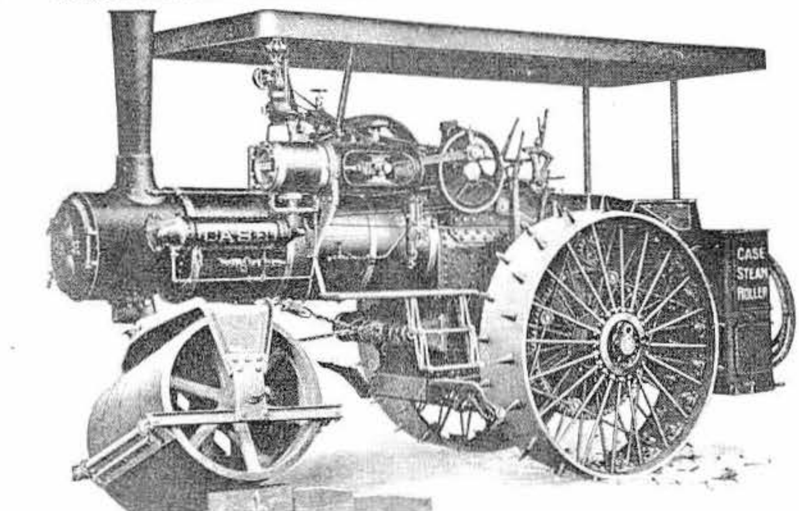


This 40 H.P. Case steam road roller, built in 1919, is owned by Charles C. Shanbarger of Stewartstown, Pa. This is a ten-ton road roller that had a short wheel-base, to allow short turning. The width of the rolling surface was 7 feet 9 inches. The tubes could be cleaned with a regular flue scraper in ten minutes. The front roll could be turned when the machine was standing still. It had a spring mounted, spring cushioned, gear and ball bearing front bolster.

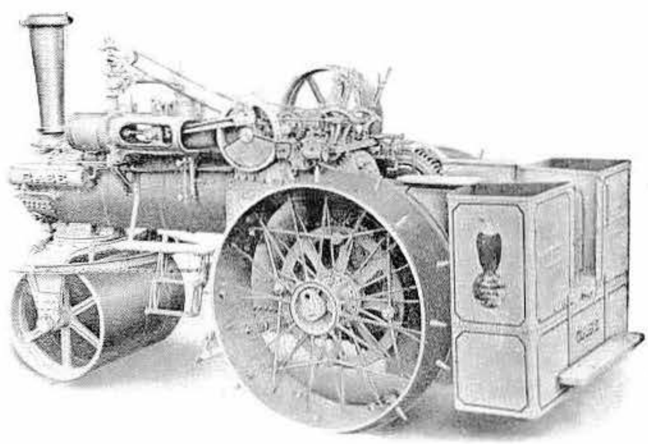


The 10-ton 40 H.P. Case steam road roller also used an 8¼ x 10-inch cylinder. This steam roller had a short wheel base which allowed short turning, and used a differential gear. The width of the rolling surface was 7 feet 9 inches. It had a power steering device, and the front roll could be turned when the machine was standing still. It had spring mounting, spring cushioned gearing, and a ball bearing front bolster. This engine new cost $2,400.

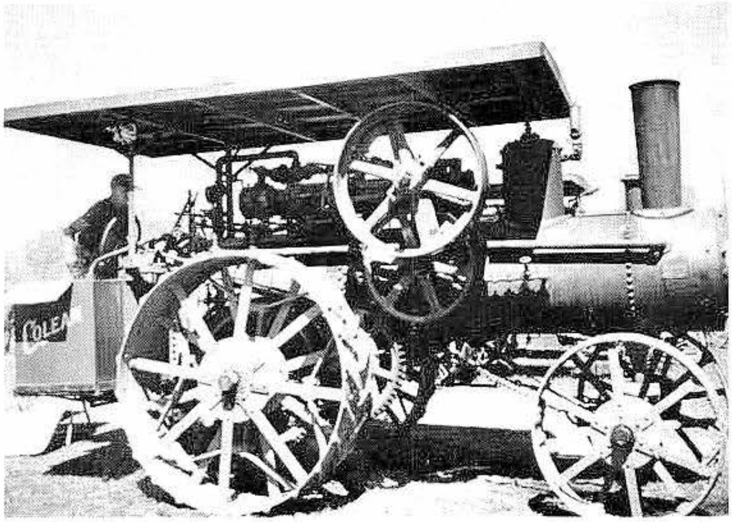
Another view of the 40 H.P. Case steam road roller with 8¼ x 10 inch cylinder. The front roll easily surmounted obstacles in its path. The rear wheel picks could be inserted or removed without tools. The extreme width of the front roll was 50 inches and the rear was 78 inches. The speed was 2¼ miles per hour at normal engine speed. The wheel base was 120 inches; extreme length was 18 feet 6 inches; extreme height was 10 feet 2½ inches, and the ground clearance was 16 inches.



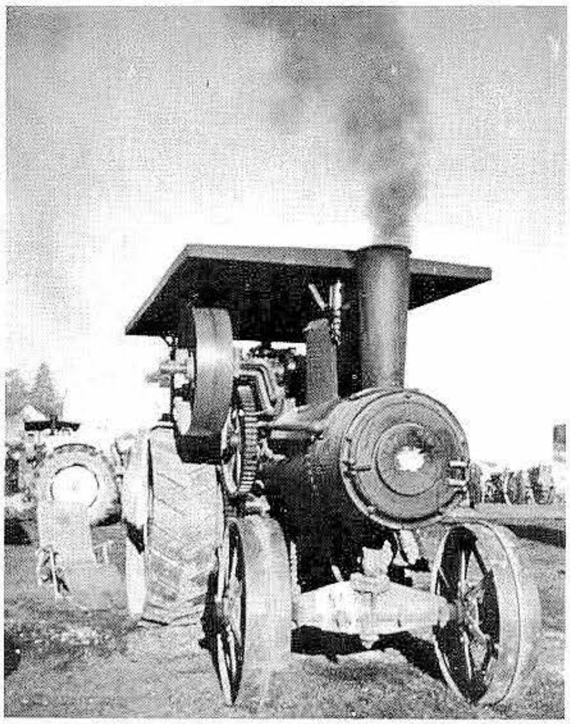
The 10-ton 36 H.P. Case steam road roller had an 8½ x 10-inch cylinder. This roller was compactly built; length over-all was only 16 feet 7 inches, and the extreme width was a trifle over 7 feet. The distance between axles was but 9 feet 5 inches, affording a very short coupling which permit its being turned on narrow roads in less space than other makes. This engine new cost $2,300 in 1906.



Colean Mfg. Co.



This 18 H.P. Colean steam traction engine was built in 1905 by the Colean Mfg. Co. of Peoria, Ill. This engine is owned by Milo Mathews of Mount Union, Iowa, and is in action at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa.



A close-up look at the front end of an 18 H.P. Colean steam traction engine built in 1905. This engine is owned by Milo Mathews of Mount Union, Iowa.

William H. Colean, as manager of the Peoria territory of central and southern Illinois, had met with splendid success in the sale of Aultman traction engines and threshing machinery. This success inspired Colean to resign his position, and with Peoria acquaintances, establish a business for the manufacture and sale of a complete line of steam traction engines, threshing machines, etc. Unfortunately, this was at the time when steam powered traction engines and equipment were being rapidly replaced by gasoline powered engines, and portable threshing machines were to a large extent, outmoded by the use of portable field harvesters.

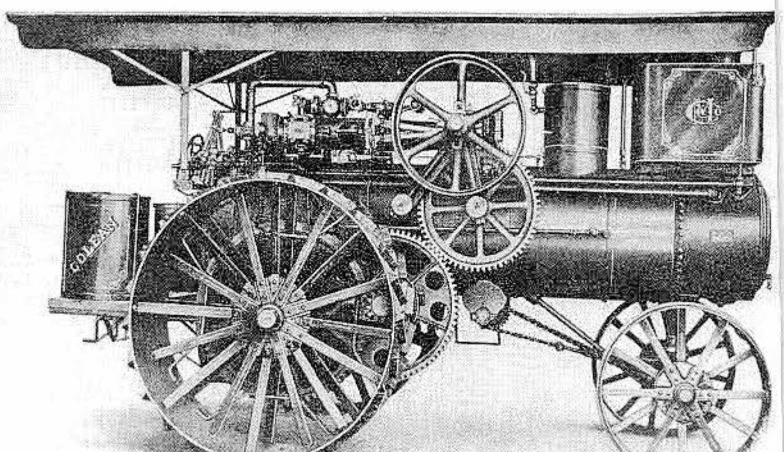
After a few years of pioneer work and before it had reached a profitable basis, the Colean Mfg. Co., heavily in debt, was forced into bankruptcy in 1908. The plant was closed and several hundred workmen lost their employment.

The Colean Double steam traction engine used a extra heavy double-riveted steel boiler. The crown-sheet was so constructed that in going down hill it would always be covered with water.

The thickness of the boiler plates was a valuable feature; they were tested to a 60,000 pound tensile strength. Such precautions showed how they keep in mind the main requirements for safety of person and property. In constructing the engines, they arranged the fire-box so that it may have been repaired without having to send the engine back to the factory. Any boiler-maker (any man who could drive rivets) could make the repairs; there was nothing complicated about the job.

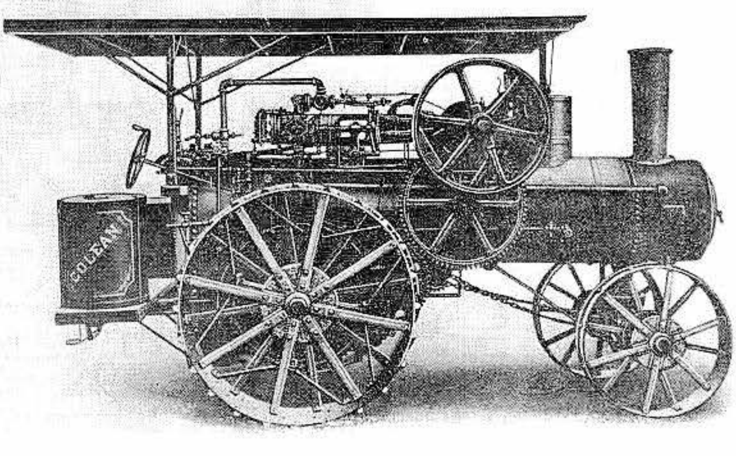
The fire-box and boiler of the engines were constructed on the latest principles of securing great power at the least expense in fuel and water, and with ordinary care they would last as long as the engine.

The Colean Mfg. Co., made steam traction engines, Colean separator and a special steel geared steam traction engine for railroad contractors.



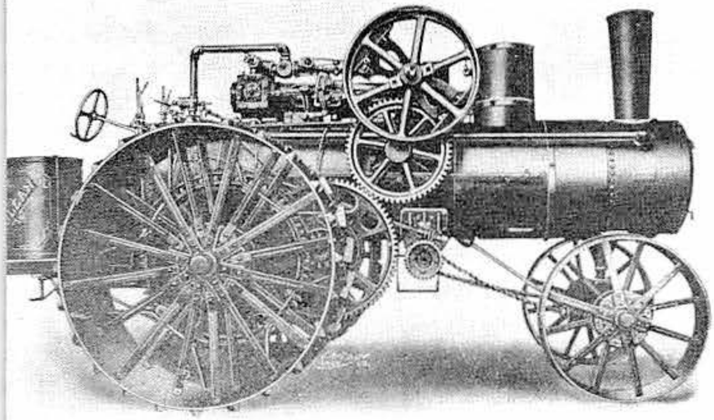
Especially built for freight work was this 25 H.P. Colean steam traction engine. After a few years of pioneer work and before it had reached a profitable basis, the Colean Mfg. Co., heavily in debt, was forced into bankruptcy in 1908. The plant was closed and several hundred workmen lost their employment.

COLEAN MFG. CO., Peoria, Ill.

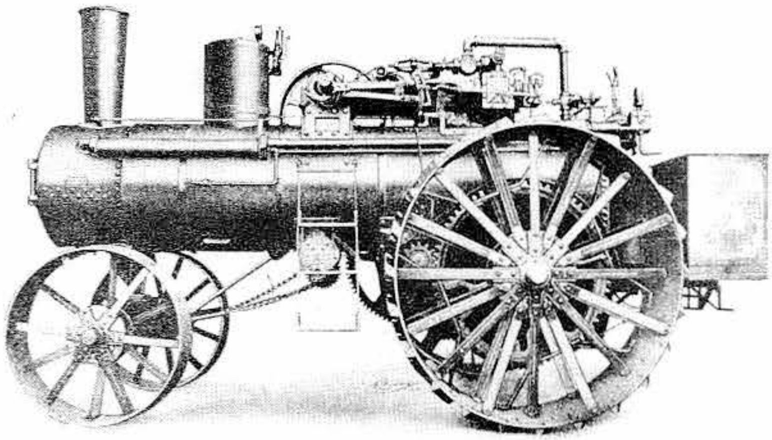


This is a double cylinder 18 H.P. Colean steam traction engine, built in 1908. William H. Colean started the Colean Mfg. Co. in Peoria, Ill.

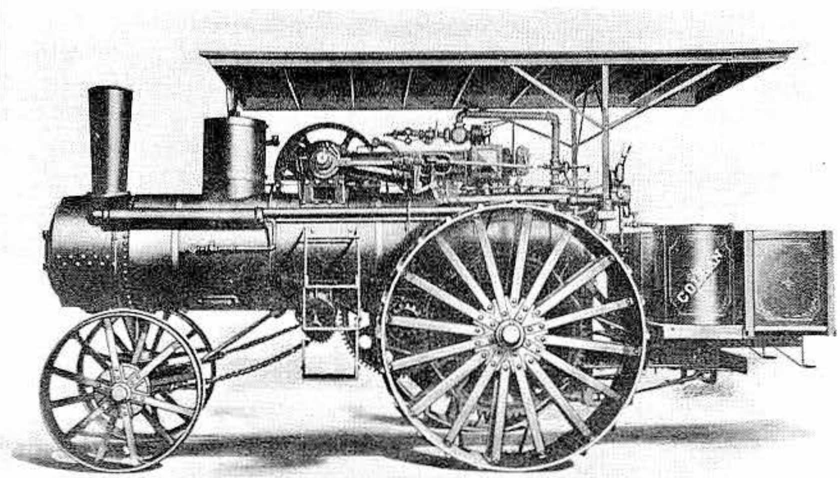
Colean Mfg. Co.



This 30 H.P. Colean steam traction engine is a wood, coal or straw burner of double cylinder style. The Colean double engine used an extra heavy double-riveted steel boiler. The crown-sheet was so constructed that in going downhill it would always be covered with water.



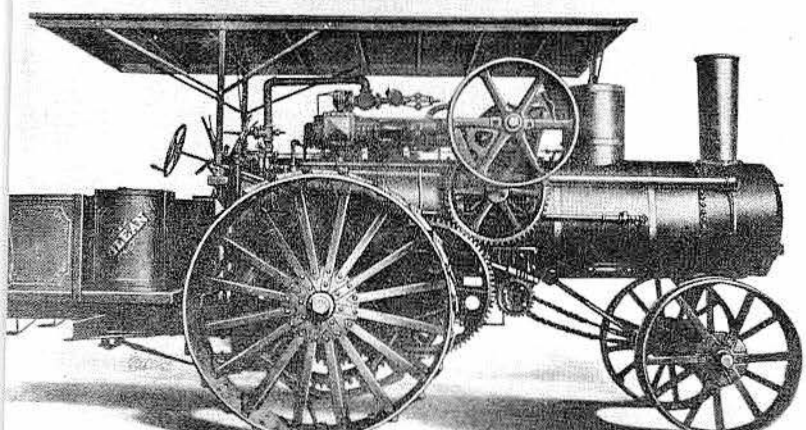
A 30 H.P. Colean steam traction engine was pictured in a Colean catalog of 1906. The thickness of the Colean boiler plates was a valuable feature; they were tested for 60,000 pounds tensile strength.



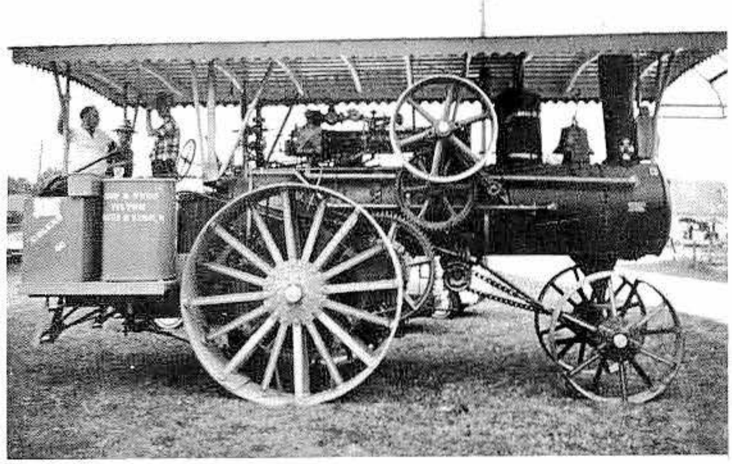
–COLEAN–

A 30 H.P. Colean steam traction engine of 1906. The fire-box and boiler of the Colean engines were constructed on the latest principles of securing great power at the least expense in fuel and water, and with ordinary care they would last as long as the engine.

The fly wheel side of the 1906 30 H.P. Colean steam traction engine. This engine was especially built for freight work.



This 40 H.P. Colean steam traction engine, built in 1894, is owned by V. O. Tilton & Son of Lima, Ohio. It appears at the Miami Valley Steam Threshers Assn. show in London, Ohio. The Colean engine was manufactured at East Peoria, Ill. The Caterpiller Co. took over the plant after the Colean Mfg. Co. went bankrupt in 1908.

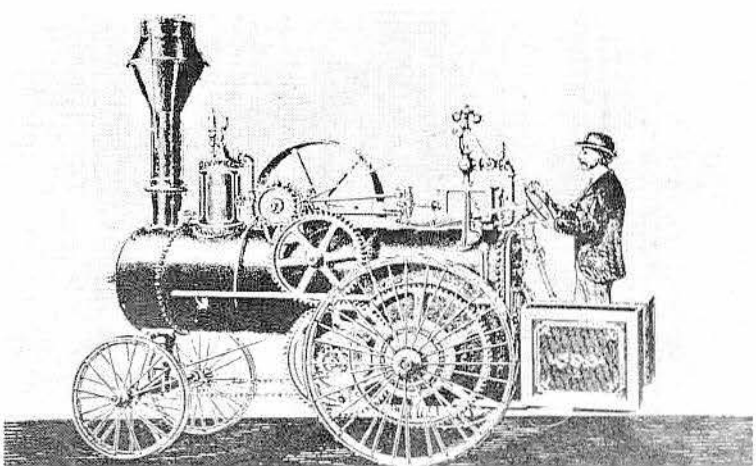


C & G Cooper

The Cooper Co. was founded in the fall of 1833 by Charles and Elias Cooper in the city of Mount Vernon, Ohio, when they erected their original foundry. The two brothers were reared on a farm three miles south of Mount Vernon, which was purchased by their father in 1810. Numerous stories were told about C. J. Cooper. Apparently he was a man of determined character, and one who was at all times candid in his relationships with other men. On one occasion, a railroad failed to pay for a locomotive which the company had built and delivered. So he locked one of the wheels of the locomotive to a rail with a padlock and chain. He refused to remove them until he had received his pay.

Elias Cooper died in 1848, and for one year Charles managed the firm alone. He then sold an interest in the company, to T. L. Clark. At that time the old name of C. E. Cooper became Cooper & Clark. During 1852 John Cooper, a younger brother, joined the firm and for one year the name became C. & J. Cooper. The Cooper & Co. began the manufacture of threshing machines in 1840; during 1842 they added the building of steam engines and sawmills. Then in 1850 they began the manufacture of boilers. By 1880, they employed two hundred workmen in the various departments of their plants, as follows: Four clerks, 10 foremen, 40 in the moulding room, 45 in the boiler room, 20 in the blacksmith shop, 25 in the paint shop, 31 in the wood shop and 25 in the pattern shop. The company built its first Blowing Engine in 1852. A number of those primitive engines and boiler plants were installed in the charcoal and iron furnaces in Southern Ohio. Some of those one cylinder engines were in operation for almost sixty years. Fairchild joined the company in 1865. In 1868 he was taken into active partnership. During the same year J. C. Debes, who was a well educated, experienced and competent man, and had been associated with the George H. Corliss Works in Providence, Rhode Island, was brought to Mount Vernon as a Mechanical Engineer for the company. For a number of years Mr. Debes was the guiding light of the C. & J. Cooper Co., and much of its success was attributable to him. In later years his son, James H. Debes, served in a similar capacity until his retirement.

It was under the supervision of J. C. Debes that the first Corliss Engine was built in the west, which was designed and placed in service during 1869. It was during that same year C. G. Cooper and Colonel George Rogers, son and son-in-law respectively of Elias Cooper, were made partners in the company. George Rogers was born in Licking County, Ohio, September 19, 1836. His parents moved to Mount Vernon when he was about four years of age. With the exception of the four years he spent in the Union Army during the Civil War, he resided in Mount Vernon during his entire lifetime.



During the war he rose to a Colonel in the Army, and rendered outstanding service to his country. George Rogers invented and patented the Bevel Gear Attachment which was used on steam traction engines. C. J. Cooper & Co. was the first company to use the device, and placed their first steam traction engine on the market in 1875. That was the company's first successful self-propelled steam traction engine. It became a major product of the company, and brought it wide-spread lasting fame.

While the engine operated under its own power, it still lacked a method of steering. So a team of horses or even men were used to steer it. There were many bets that those engines could not climb or surmount the hills, nor could they travel on certain roads, which in those days were sometimes veritable bogs. Large crowds often gathered from miles around to watch those engines perform. Yet, in spite of the jeers, the engines never failed to perform, no matter how difficult the job may have been.

During those early days of the steam traction engine many people were skeptical, distrusted and feared them. Well they may have distrusted and feared them, for there were engines in operation which were flimsy and imperfect in their construction. Poor boiler plate and inferior safety valves were all too common, which resulted in numerous boiler explosions, accompanied by the loss of many lives. Usually the operator of those engines received the brunt of the blame for his carelessness. Unfortunately, all too often the public was quite unaware of the defects in the construction of the boilers.

The steam on those engines was controlled by means of valves. There was no reverse or reverse lever, nor was there a clutch on those first steam traction engines. In fact, the clutch came into use quite a number of years after the Bevel Gear Attachment was invented.

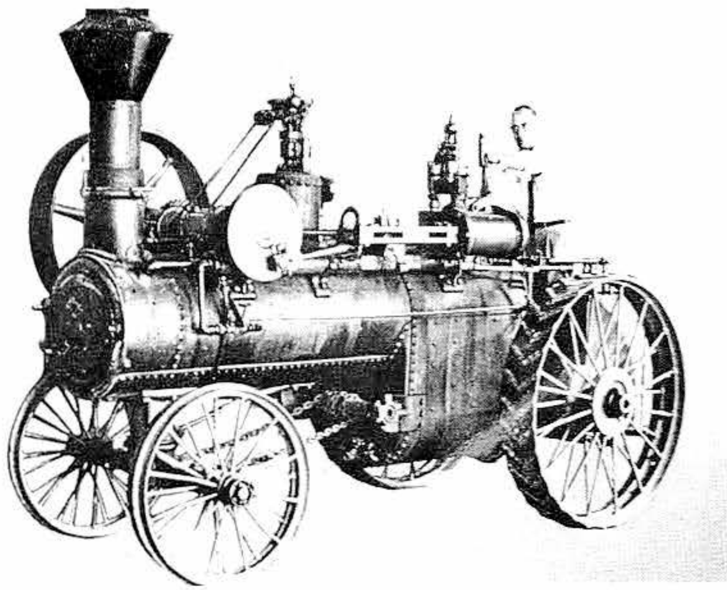
A brief description of the Bevel Gear Attachment on the 1880 Cooper Engine may be in place. Those engines were often characterized as the "Sunflower" engines due to the resemblance of the bevel gear to a sunflower. There are two levers on the platform-the throttle and reverse lever. Inside the flywheel and immediately below the bevel gear is located a hand wheel, five or six inches in diameter. The function of this was to engage and disengage the bevel gear. When the operator of that engine desired to engage or disengage the bevel gear, he had to leave the platform in order to perform that function. A few years prior to the innovation of the clutch, a marked improvement occurred. A lever was so placed that the engineer could engage or disengage the bevel gear from the platform which obviated the necessity of the engineer leaving the platform to perform that function.

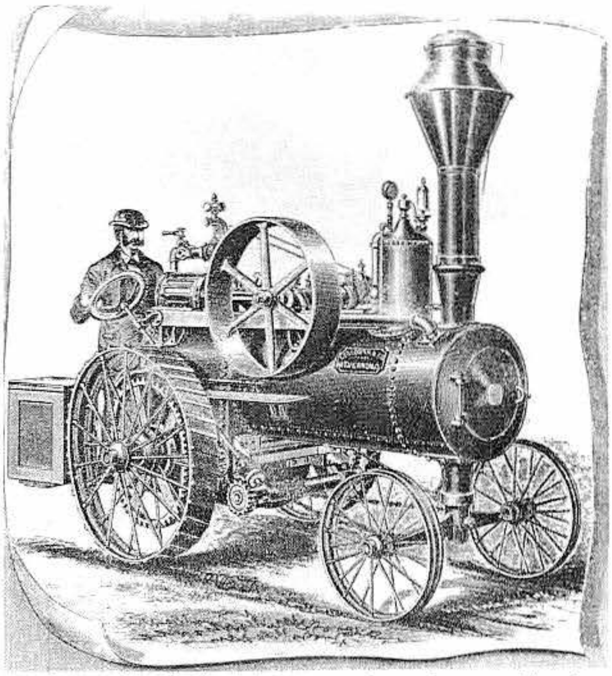
After building the bevel gear engines for a number of years, the company switched and began building a Spur Gear Engine. The Spur Gears on that engine were on the left side and not on the right side as was the case with most steam traction engines. Apparently those engines were equipped with a center hung link.

An 1883 version of the 12 H.P. C. & G. Cooper steam traction engine. Iron truck wheels were always furnished with the steam traction engines, but wooden truck wheels could be ordered. The Cooper Co. was founded in the fall of 1833 by Charles and Elias Cooper in Mount Vernon, Ohio, when they erected the original foundry.

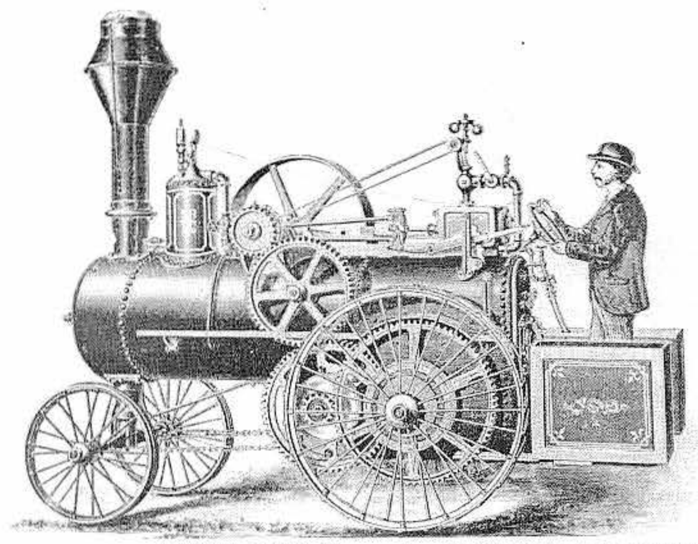
C & G Cooper

A 12½ H.P. C. & G. Cooper steam traction engine built in 1873. This engine was built by C. & G. Cooper & Co. of Mount Vernon, Ohio. The engine is owned by the Cooper-Bessmer Co. of Mount Vernon. It is a self-steering engine weighing 6 tons. The price was $435.





An 18 H.P. C. & G. Cooper steam traction engine was pictured in an 1882 C. & G. Cooper catalog. George Rogers invented and patented the bevel gear attachment which was used on steam traction engines. C. & G. Cooper & Co. was the first to use the device.

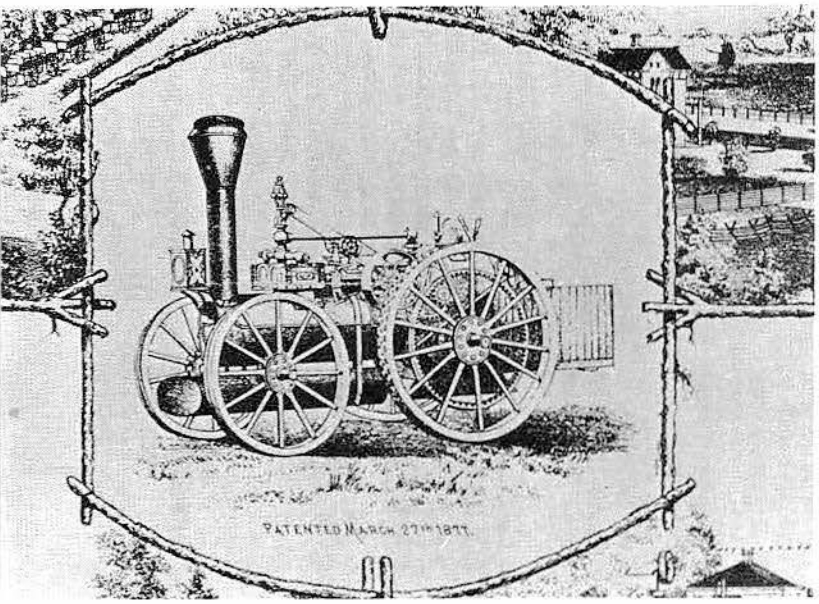


A 15 H.P. C. & G. Cooper steam traction engine was pictured in an 1882 C. & G. Cooper catalog. The Cooper & Co. began the manufacture of threshing machines in 1840: during 1842 they added the building of steam engines and sawmills. Then in 1850 they began the manufacture of boilers.

Cornell

The J. M. Ross, Sons & Co. Ltd., started manufacturing about 1890 in St. Catharines, Ontario, Canada. They made the Cornell steam traction engines and the New American three-way crank separator. The separator had a 16 bar cylinder, 30 inch diameter and diamond shark teeth. At that time the plant was the only one run by electricity in Canada. Virtually nothing is known about the steam engines produced by this company.

Davidson & Rutledge



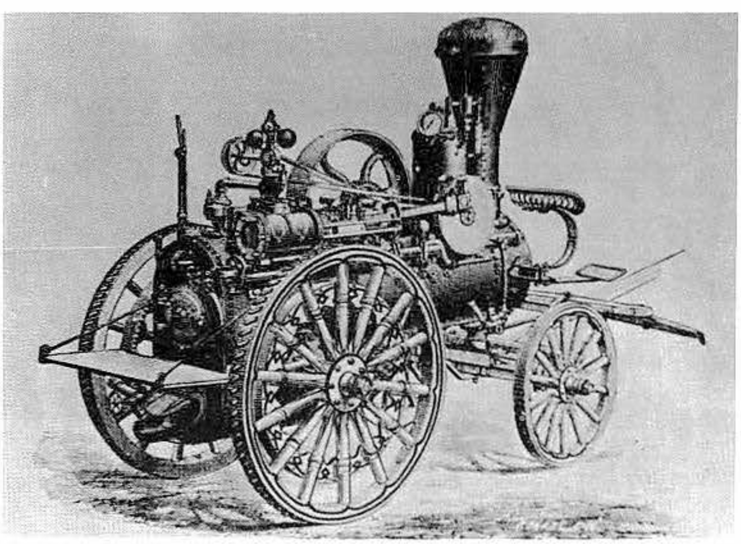
The Davidson & Rutledge enterprise was backed by George W. Rutledge and James E. Lowry. Davidson was an engineer born on December 28, 1833, in Trumbull County, Ohio.

For many years, he was on the road selling farming implements. He was of a mechanical turn of mind, and invented a machine that proved to be a source of great revenue to him. This was the Davidson Steam Traction engine, which did work on both the farm and the road. It was patented March 27, 1877.

A Davidson & Rutledge steam traction engine, built in 1877, by Davidson & Rutledge of Ada, Ohio. The Davidson & Rutledge enterprise was backed by George W. Rutledge and James E. Lowry. Davidson was an engineer born on December 28, 1833, in Trumbull county, Ohio. The first Davidson & Rutledge steam traction engine was patented in March 27, 1877. This is the only illustration which could be found of this make of engine.

Eagle Machine Works

The Eagle Machine Works, Indianapolis, Ind., manufactured threshing machines, portable and stationary steam engines, steam traction engines, boilers, sheet iron work, circular and muley saw mills, wood working machinery, horse powers, corn drills and drag saws.



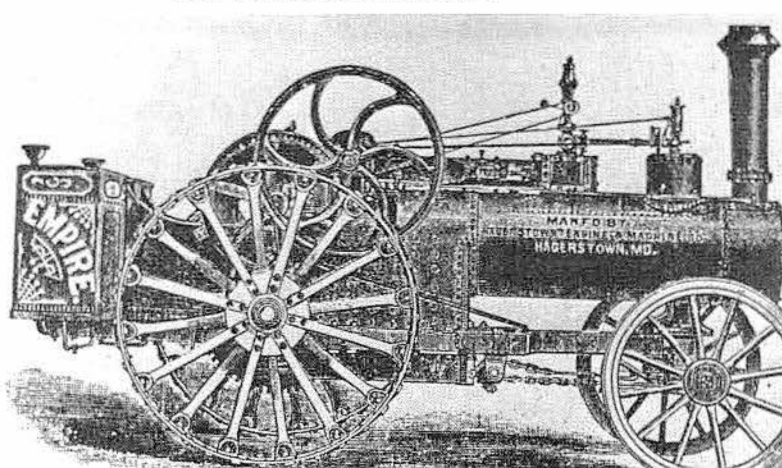
The Eagle steam traction engine was built in 1881 by the Eagle Machine Works of Indianapolis, Ind. It is horse-steered with the seat up front. The company also made steam traction engines steered from the rear. This picture is from Al New's Eagle Machine Works 1881 catalog.

Empire

On Baltimore St. in South Hagerstown, Md., Garver & Flannagan had shops where they manufactured threshing machines. This was changed in 1874 into the Hagerstown Steam Engine and Machine Company, of which Josiah F. Smith was President. The company added the manufacture of steam engines and steam traction engines plus other farm machinery to threshing machines.

The company purchased the old McDowell & Bachtell foundry on Franklin and Foundry Streets and erected a large additional building in which, for a time, considerable manufacturing was done. But in a few years the business became unprofitable and was discontinued. About 1900, a portion of the property was sold to the Hagerstown Brewery and later on the remainder was disposed of.

An "Empire" steam traction engine was built in 1880 by Hagerstown Steam Engine & Machine Co. of Hagerstown, Maryland. On Baltimore St. in South Hagerstown, Garver & Flannagan had shops where they manufactured threshing machines. This name was changed in 1874 into the Hagerstown Steam Engine and Machine Co. of which Josiah F. Smith was president. At this time the company added the manufacture of steam engines and steam traction engines plus other farm machinery. Very little is known about these engines, and no other illustrations are known to exist.



A. B. Farquhar Co.

The Pennsylvania Agricultural Works was founded by A. B. Farquhar, as the A. B. Farquhar Co. in 1856. From his boyhood days, Farquhar had been identified with the manufacture of agricultural machinery and implements. He was intimately acquainted with the real needs of farmers and planters and being a practical mechanic and inventor, he was peculiarly successful in the production of machines and implements, as well as a man of rare business capacity. All this enabled him to produce standard agricultural implements and steam traction engines and a number of special machines in large quantities and at the minimum cost.

The Pennsylvania Agricultural Works covered a number of acres, and embraced machine, engine, and boiler shops, bolt and nut factory, planing and saw mills, foundries for brass and iron forging, shearing and polishing rooms, besides warehouses, lumber yards, etc., all complete in itself. Among the specialties were steam engines, saw mills, threshing machines, plows, agricultural steels, cultivators, grain drills, corn planters, horse powers, etc., in almost endless variety. The magnitude of the operations was such that the weekly consumption of iron and steel at that time was over 300,000 pounds, and of lumber from 50,000 to 100,000 feet.

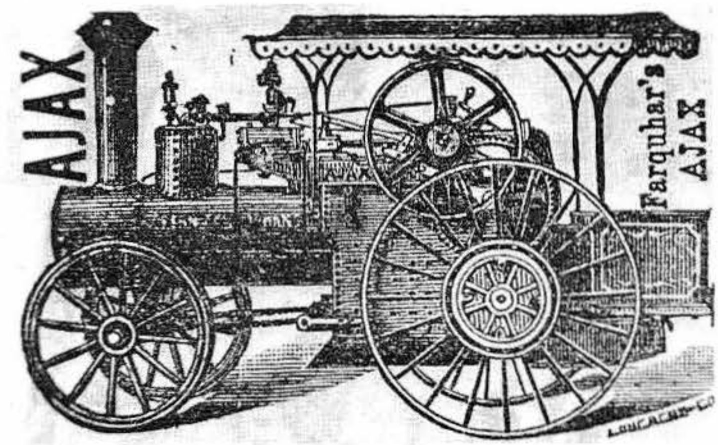
Among the well-known specialties manufactured at the works were the Farquhar Ajax steam traction engines and portable engines, (the fire-boxes were steel, and the boilers had a remarkable record, not one having ever exploded); the vertical boiler, arranged with wheels when desired; the Farquhar vibrators and rake separators, claimed to be the best merchant threshing machines in existence at that time; and saw-mills with patent feed, set works and clogs of most improved kind. Among the leading implements manufactured there were the Pennsylvania drill and corn planter, with perfect force-feed and phosphate attachment; the Farquhar celebrated wheel or sulky plow; power hay-presses, and the Farquhar improved cotton planter.

The Farquhar improved cotton planter was very simple and perfect in its operation, dropping the unrolled seed with remarkable regularity and in any desired amount. The Keystone Corn planter would plant from ten to twelve acres of corn per day, dropping kernels in drills or in hills, at any desired distance apart, and sowing at the same time—it used any kind of pulverized fertilizer. The Pennsylvania Force-feed Fertilizer grain drill would not only sow the grain evenly, but what was an equally important feature, it distributed the phosphate with the same precision, doing the work without any loss of either seed or fertilizer.

A. B. Farquhar sold his agricultural implements all around the globe. Year by year the demand increased until it came from every state and territory of the U.S., and from Canada, Australia and New Zealand, India, and Europe. The various South American states became important customers, as did France, Germany, Russia, China and Japan. Even Africa was constantly making demands for implements and machinery from the Pennsylvania Agricultural Works, and it may truly be said that Mr. Farquhar's name spread to every civilized nation on the habitable globe.

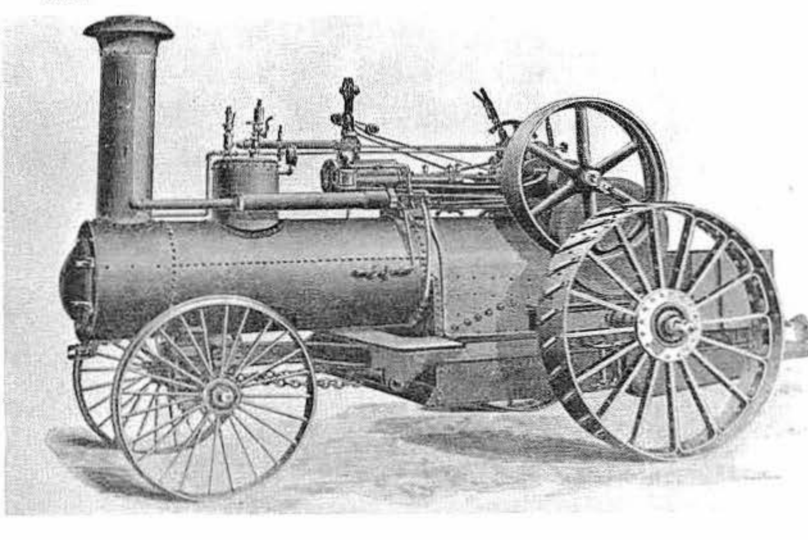
Farquhar machinery had been awarded premiums at all the leading Expositions, including the Centennial at Philadelphia, Paris Exposition, New Orleans Cotton Exposition, World's Columbian Exposition, Pan-American at Buffalo, and World's Fair at St. Louis.

A. B. Farquhar had a limited partnership association in January 1, 1889. In 1952 the Oliver Corporation acquired A. B. Farquhar Company Ltd. of York, Pa.

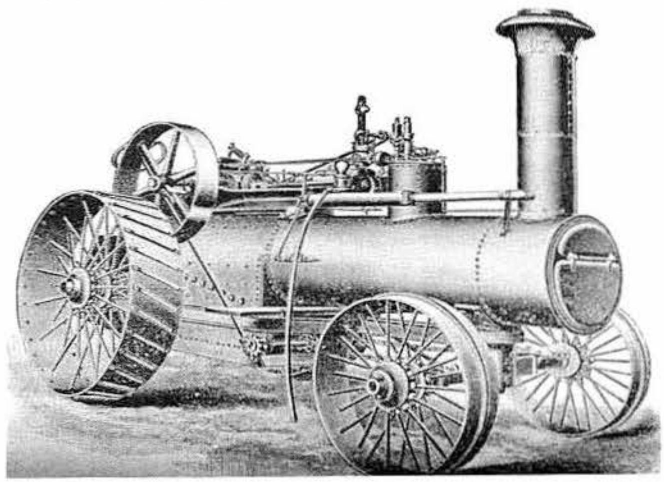


A. B. Farquhar steam traction engine was built in 1885 at York, Pa. This engine used the locomotive type boiler. A. B. Farquhar sold his agricultural implements all around the globe.

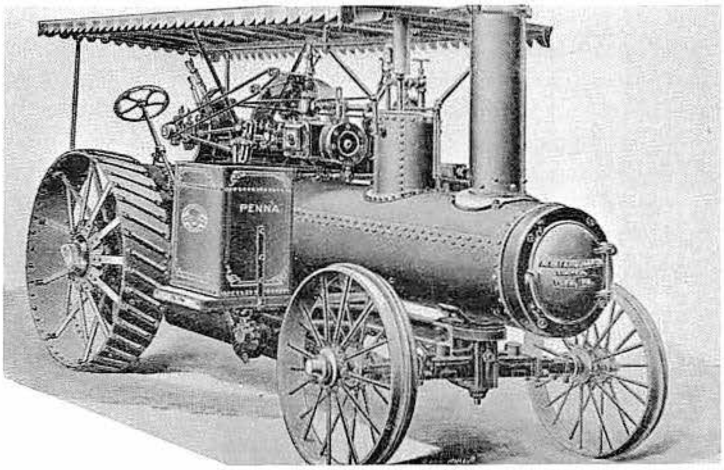
The 1901 Farquhar engine's governor was new and designed especially for steam traction and saw-mill engines. It had an approved stop and sawyer's lever attachment. This engine was made in sizes of 8 to 10; 11 to 12; 12 to 15; 15 to 18; and 18 to 20 H.P.



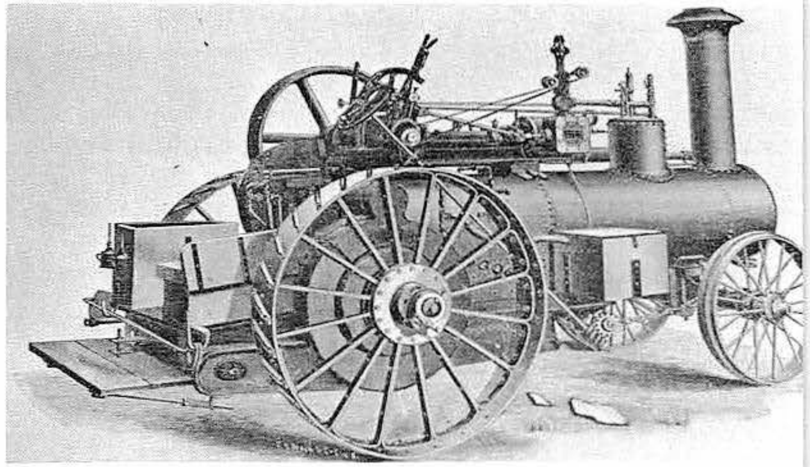
This A. B. Farquhar steam traction engine was built in 1897. The Farquhar improved, water-tube, fire-box traction engine boiler had many advantages over the others. It was made entirely of steel, with a tensile strength of 600,000 lbs. double riveted. The crown sheets were extra thick and braced and supported by an extra number of stay-bolts. The sheet around the fire-box was unusually heavy. The engine was built by A. B. Farquhar Co. of York, Pa.



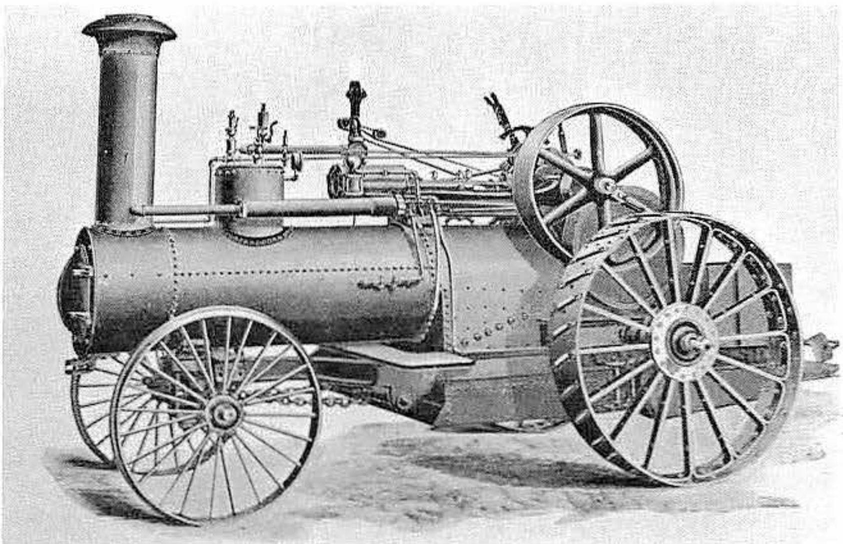
A. B. Farquhar Co.



The 1903 Farquhar engine had a cab, friction clutch, new style ash-pan and a tank on either side of the boiler in front of the drivers. The left hand tank did not interfere with the drive belt. This engine was known as the "Pennsylvania" steam traction engine.

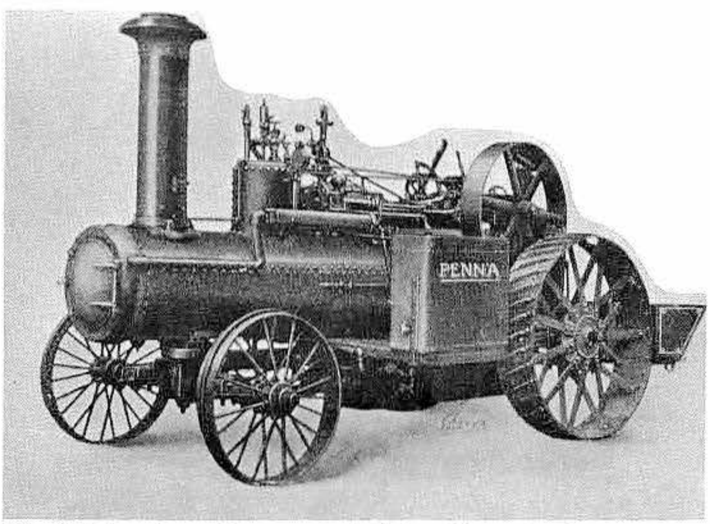


The 1901 Farquhar engine used a new friction clutch. It enabled the operator to exert the full power of the engine instantly to overcome an obstruction, or in case of accident, to immediately disconnect it. It was a great advantage in putting on the belt, and lessened the danger of breakage in case of sudden strain. It avoided the use of bars or pries to asssist the engine over obstructions, or delay in coupling and uncoupling.

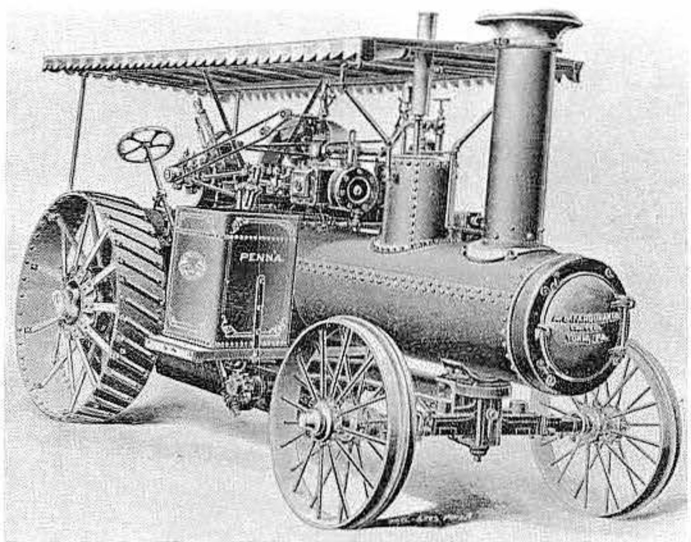


This 1903 Farquhar engine was a center crank type with balanced crank, and with a plain "D" slide valve. It had a patent reverse gear, which was the simplest arrangement known for the quick reverse of an engine, assuring an equal amount of cut off, with no sliding surfaces to wear and no pins to become loose.

FARQUHAR MACHINERY

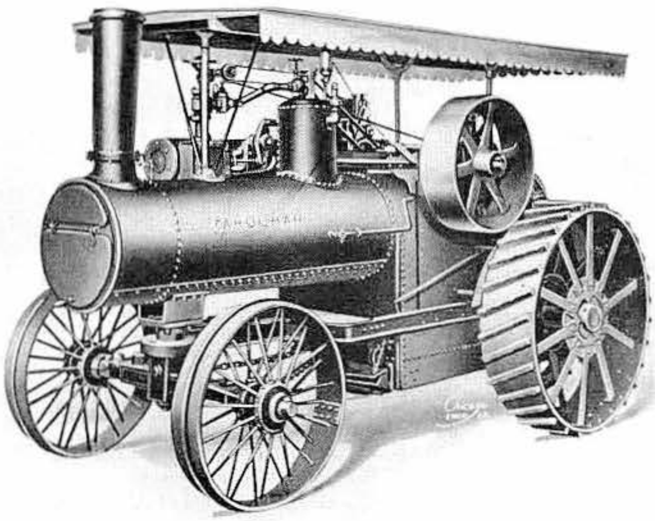


This 1906 Farquhar engine was not only designed for road work but capable of driving machinery of various kinds, such as threshers, saw-mills, hay presses, and cotton gins.

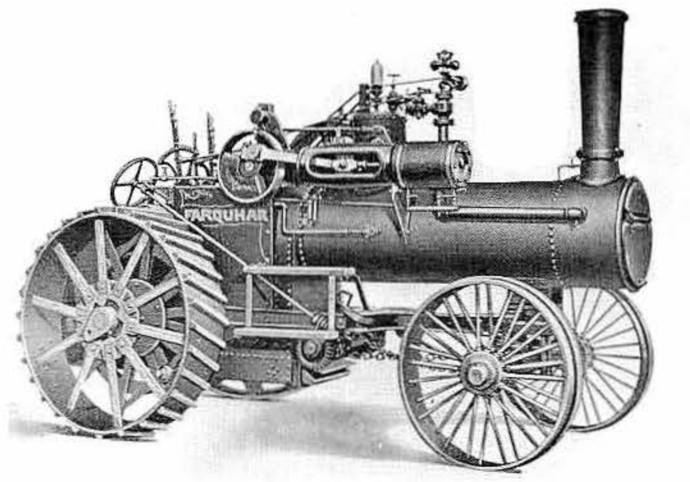


This 1906 Farquhar steam traction engine was fitted with link reverse, friction clutch and steel gears, heavy rear driving axle and wheels mounted on an independent steel frame. It was made in five horse power sizes.

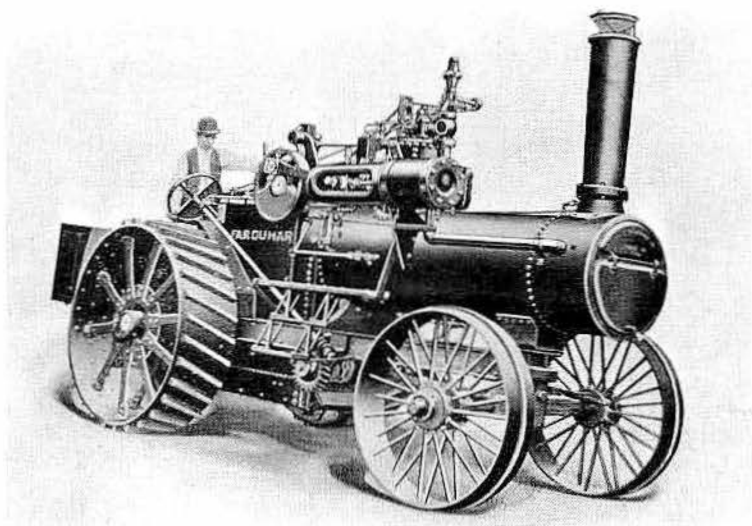
A. B. Farquhar Co.



This 1907 Farquhar engine was a side crank, plain slide valve with a heavy balanced disc, solid forged crank and heavy fly wheel. This enabled the operator to keep the engine off dead center. From the specifications, the cylinders were large per rated horsepower, but the boiler capacity was more than sufficient with proper care in operation. The reverse was an improved single eccentric. All wearing parts of the engine were made for easy adjustment, including the cross head, reverse and friction clutch.

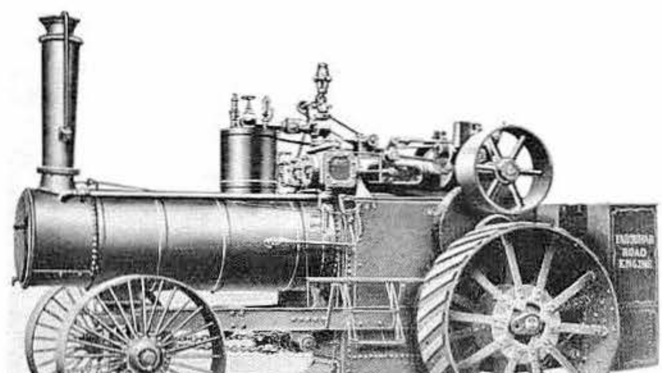


This was the new 1907 style "K" Farquhar steam traction engine made in four sizes. K-10, 7¾ x 10-inch cylinder; K-12, 8½ x 10-inch cylinder; K-15, 9 x 11-inch cylinder, and K-20, 10 x 11-inch cylinder.

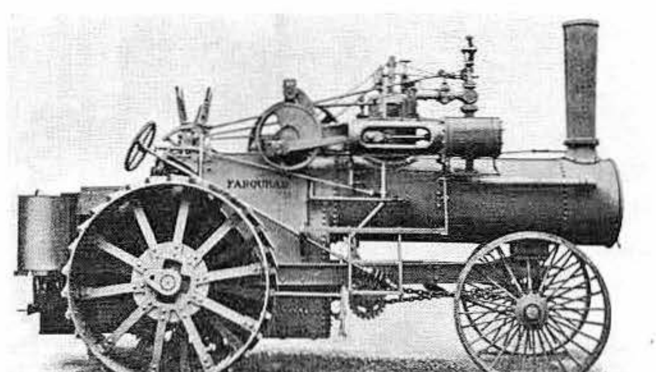


This engine is a 1912 "K" style, single cylinder, double drive, independent mounted. Built for general work, the style "K" came in four sizes of 10, 12, 15, and 20 H.P.

A. B. FARQUHAR COMPANY

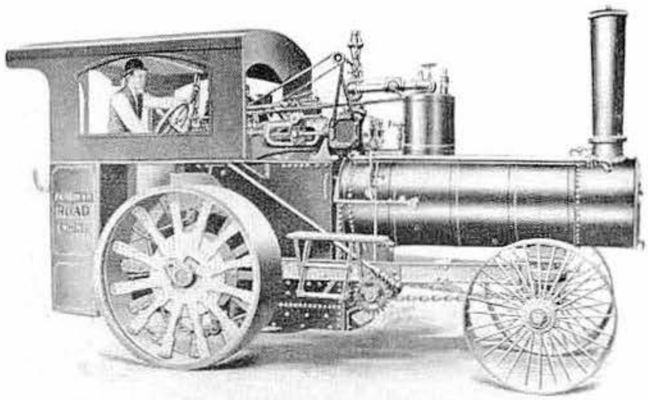


In 1912, the engine and gears were mounted absolutely independent of the boiler on 5/8-inch steel side plates attached to 7-inch channels. This steel frame was held together in the rear by a cannon-box in one piece, and a solid steel casting with brass-bushed bearings both on the counter-shaft and the main axle, which was 5 inches diameter. The counter-shaft was 3 7/16 inches. Both shafts were of high carbon steel.

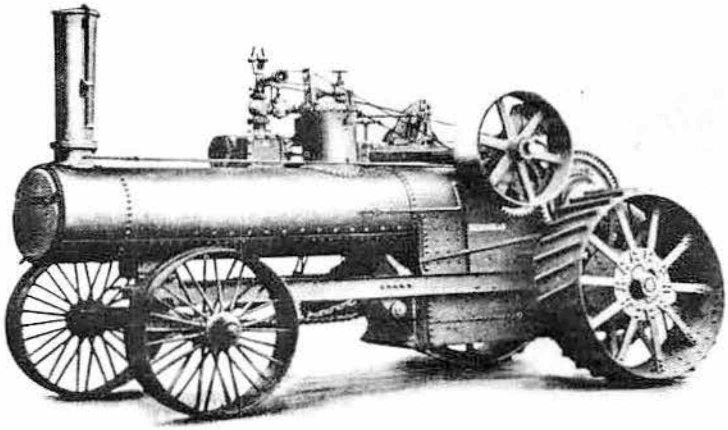


The 1916 Farquhar style "K" was a single cylinder, double geared, independent mounted traction engine, suitable for general work. It was built in three sizes, 15, 20 and 25 H.P. Regularly this engine was equipped with cast iron gears, but it could be furnished with steel gears when desired. The steel-geared engine was designated as style "K," a contractors' engine.

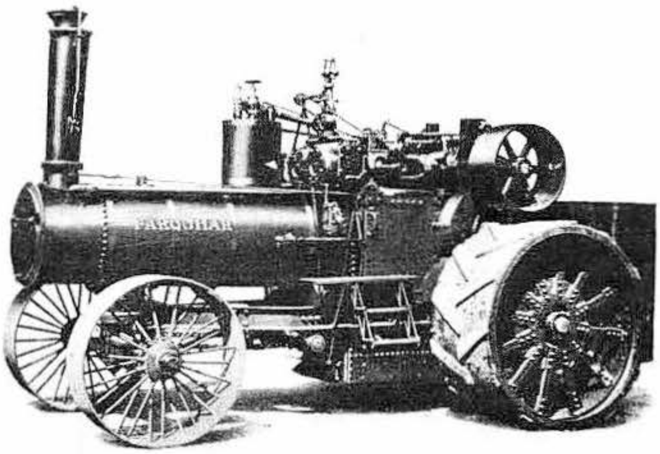
A. B. Farquhar Co.



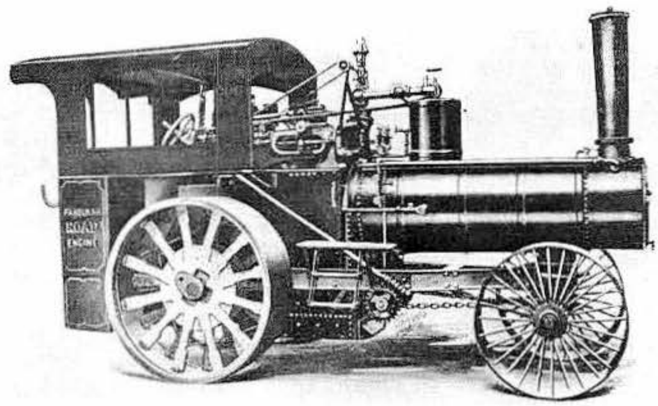
This is a 1912 double-cylinder road engine, style "L." It had independent mounting, straight line drive, steel gearing, brass-bushed bearings, and other special features. First-class material and careful workmanship eliminated expensive breakdowns and delays, so they said.



The 1916 engine had friction clutch, two injectors, water lifter with 20-foot suction hose and strainer, water gauges with glass, blow-off valve, governor with belt, blower, exhaust nozzle in stack, oil pump, all necessary oilers, steam gauge, whistle, main steam valve on the dome, lever throttle valve, combination wrench, oil can, flue cleaner, poker, and spark-arrester.

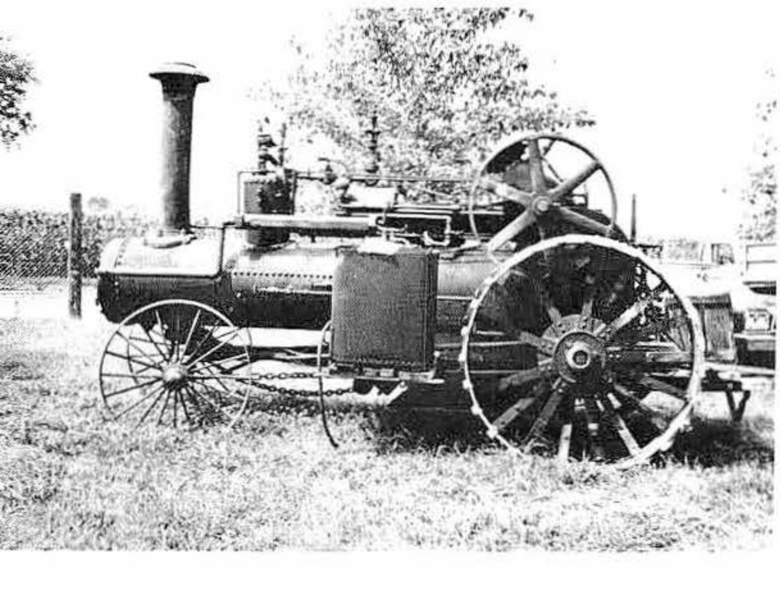


This engine is a 1916 "L" style double cylinder road engine designed for general road work, being particularly effcient in hauling and plowing. This engine was built in one size only, having two 8 x 10-inch cylinders with balanced cranks.

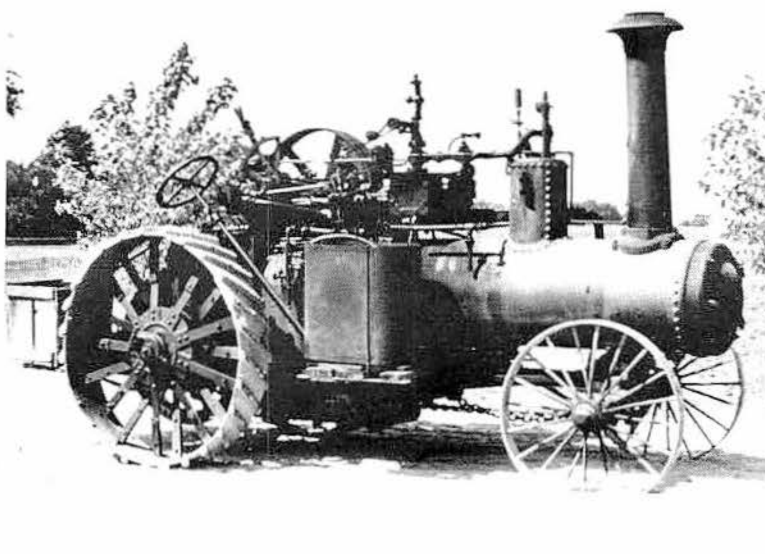


This 1916 engine is equipped with 24-inch smooth drivers and locomotive style cab. Extra extension rims for the drivers and an oil burning attachment were available.

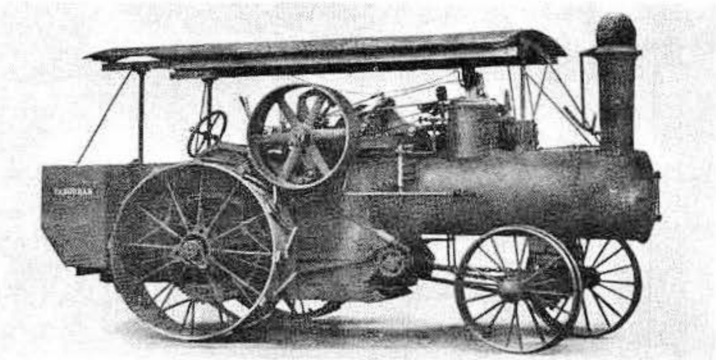
The flywheel side of the 12 H.P. Farquhar steam traction engine owned by Robert Lefever.



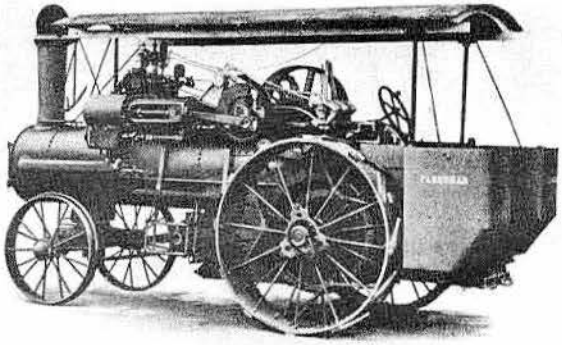
This 12 H.P. Farquhar steam traction engine, built in 1904, is owned by Robert Lefever of Strasburg Pike, Lancaster, Pa. It is at the Rough & Tumble Engineers Historical Assn. show, Kinzer, Pa. The Pennsylvania Agricultural works was founded by A. B. Farquhar, as the A. B. Farquhar Co. in 1865.



A. B. Farquhar Co.

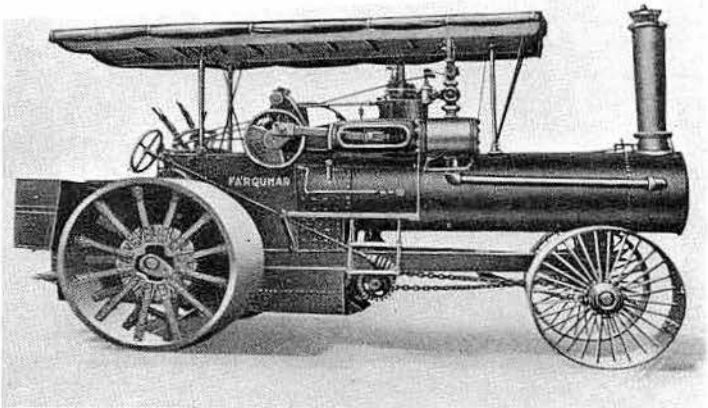


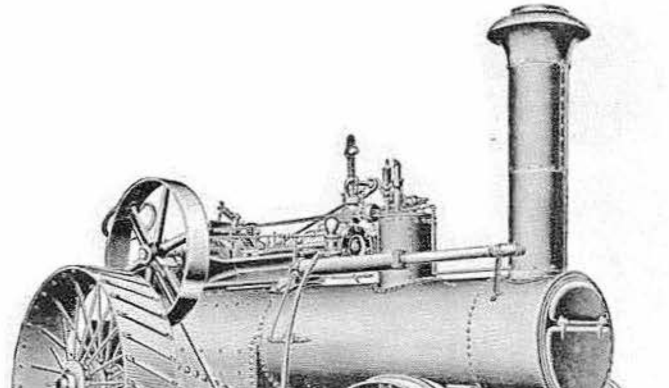
This 1916 "W" style steam traction engine was made only in one size, having an 8 x 10-inch cylinder. The nominal rating of the engine was 12 H.P., while the conservative brake rating was 36 H.P.



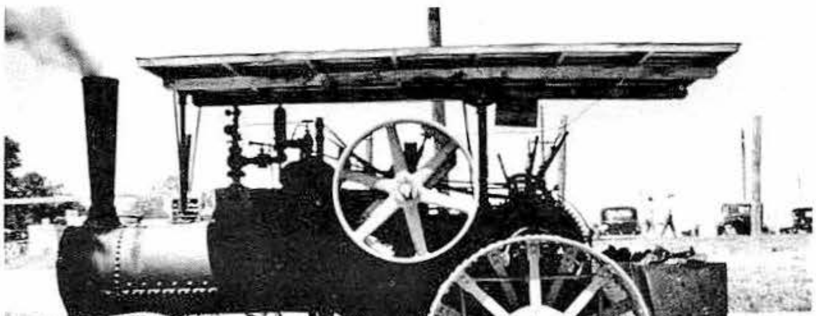
The draw bar on this 1916 engine was 18 inches from the ground, and adjustable across the rear of the engine. It was provided with a steel spring which absorbed the shocks in starting loads. The draw bar was fastened to the engine so that the load was distributed to the front and rear wheels in such a proportion that it was almost an impossibility for the engine to raise up in front.

A 15 H.P. Farquhar "K" combination steam traction engine was pictured in a 1912 Farquhar catalog. This engine was equipped with smooth wheels front and rear, and could be used for rolling, hauling, or driving on the belt. This engine was built in 15 or 20 H.P., and in single or double cylinder. This engine used open-hearth steel cast gearing, made from accurate cut gear patterns. It had a steel cannon box in one solid piece (no caps on the counter-shaft) with brass-bushed bearings, both for the main axle and the counter-shaft. A special rear hitch, lower than the regular hitch, with three hitching connections, was provided.



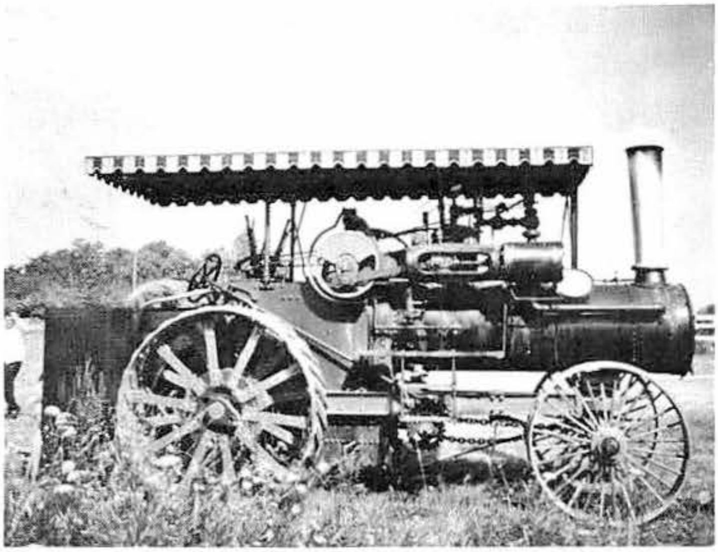


A 18 to 20 H.P. Farquhar steam traction engine of 1903. This engine was made with the fly wheel on the left hand side. A. B. Farquhar had a limited partnership association in January 1, 1889. In 1952 the Oliver Corp. acquired A. B. Farquhar Co.

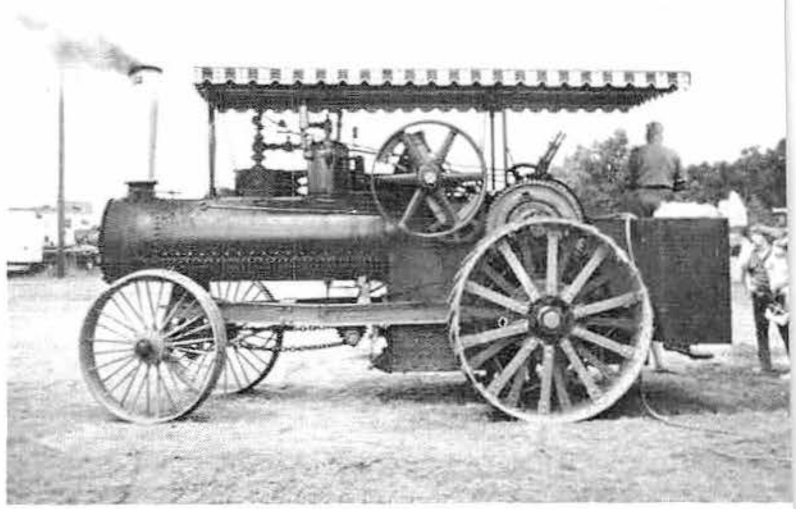


This 16 H.P. Farquhar steam traction engine, built in 1927, is owned by Morgan Hill of Linesville, Pa. It is displayed at the Pioneer Steam and Gas Engine Society of Northwest Pa., Meadville.

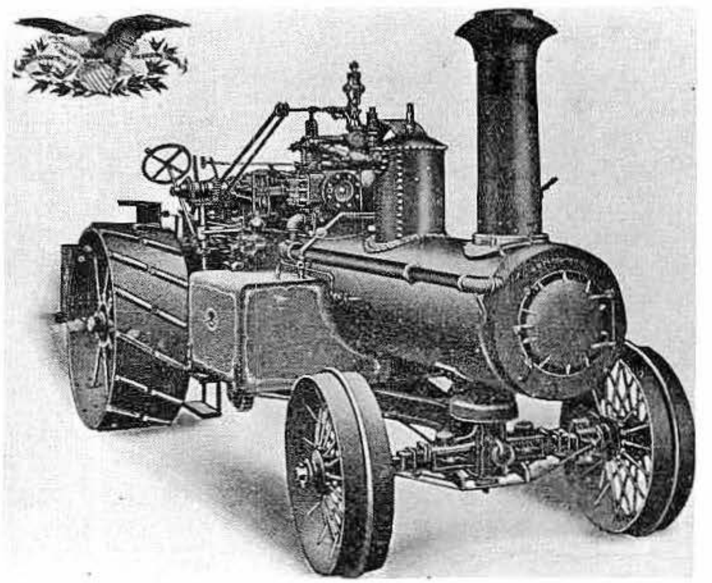
A. B. Farquhar Co.



This 22 H.P. Farquhar steam traction engine, built in 1920, is owned by Bob Marchall of East Bloomfield, N.Y. It is at the New York Steam Engine Assn. show, Canandaigua, N.Y. A. B. Farquhar said in his 1887 catalog that his # 2 engine (rated at 9-11 H.P.; had a 6½-inch bore and 9-inch stroke), "will consume in a day's ordinary threshing, where conditions are reasonably favorable, 350 to 400 lbs. of bituminous coal; if the engine is forced to its greatest capacity, the coal consumed will be more." He said it would use 10 to 12 barrels of water—310 to 370 gallons. And that was a small engine.

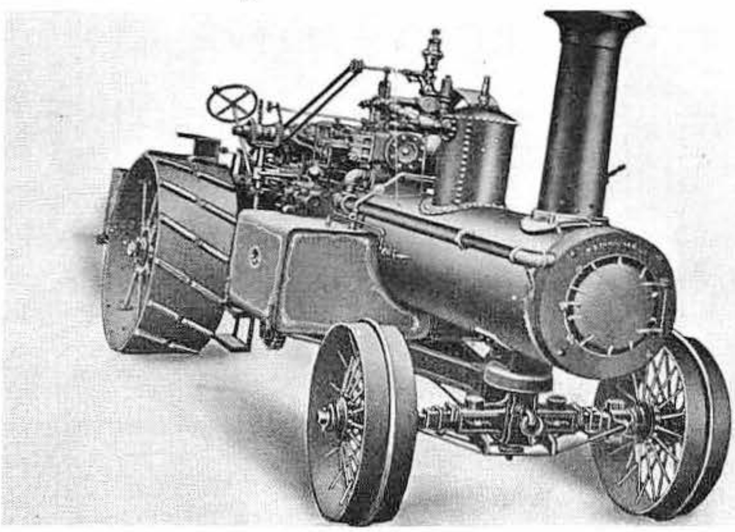


Another view of the 22 H.P. Farquhar steam traction engine owned by Bob Marchall, East Bloomfield, N.Y.

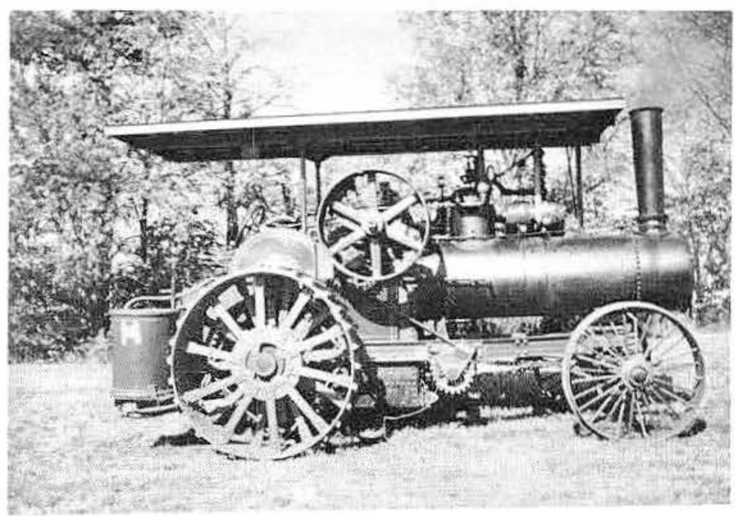


This 1906 engine of 30 H.P. is a double cylinder. The engine was double geared, and all gearing was solid steel casting. The gear wheels were 5-inches or 5½-inches face. It had pulled a 36½-ton load on a 5 per cent grade dirt road, without straining or breaking as much as a belt.

This 1907, 30 H.P. engine consists of twin or double cylinder engines. Each cylinder was 9 x 10 inches, with double link reverse controlled by one lever. This engine was a plain slide valve with balanced crank. It had three bearings on the crank, one between the connecting rods and one on each side. The front axle turned on ball bearings.



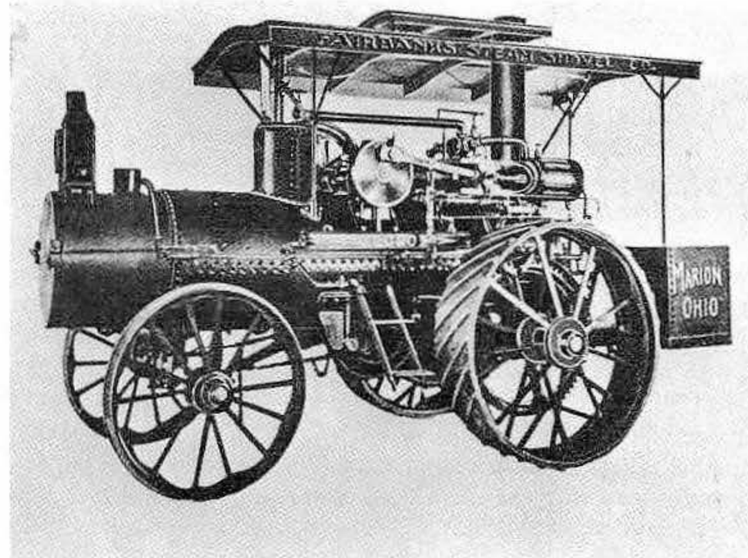
This 20 H.P. Farquhar steam traction engine, built in 1923, is owned by Glenn Fullerton of Burgettstown, Pa. It is at the Stumptown Steam Threshers Assn. show at New Athens, Ohio.



Fairbanks Steam Shovel Co.

James G. Fairbanks organized the Fairbanks Con-ruction Company, which in 1903 was followed by the ganization of the Fairbanks Steam Shovel Company f Marion, Ohio. James G. Fairbanks was the first resident and the other officers were William E. cofield, secretary; R. C. McCullon, treasurer; and R. I. Imbody, vice-president. It was a stock company hich was capitalized at $200,000. It was one of the Iarion's most important industries at that time and ave employment to 200 people.

James G. Fairbanks was born in Geauga County,)hio, on November 3, 1858, the son of Orrin C. and ydia (Wilson) Fairbanks. After completing his ap-renticeship to the machinist's trade at Urbana, Ohio, nd working as journeyman at different points he ame to Marion in March, 1878. He was employed in ocal plants for a time and then became superinten-lent of the Huber Manufacturing Company. He was ssociated with his own company for 19 consecutive ears. The Fairbanks company built dipper dredges, steam shovels, ditcher machines, sawmills, locomotive ranes and "Lobo" steam traction engines.

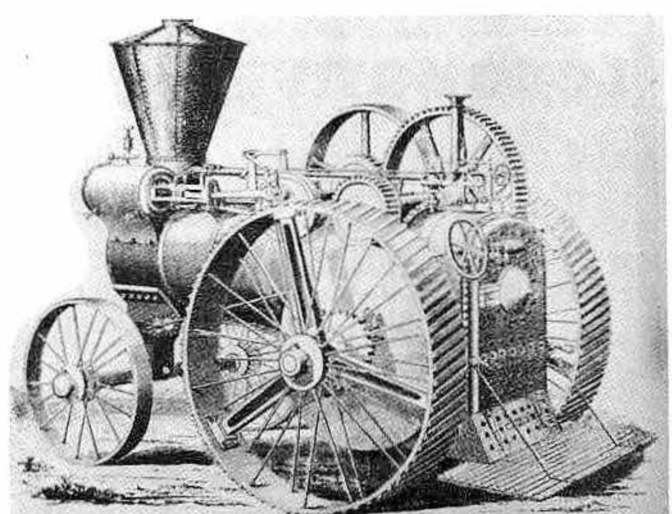


The "Lobo" steam traction engine was a return flue type, similar to the one built by the Huber Mfg. Co. James G. Fairbanks at one time was superintendent of the Huber Manufacturing Co., also of Marion, Ohio. then he organized the Fairbanks Construction Company at Marion, which in 1903 was followed by the organization of the Fairbanks Steam Shovel Company, also of Marion, Ohio.

Fishkill Landing Machine Co.

Fishkill Landing Machine Co. was incorporated February 17, 1853, and its charter was renewed at the expiration of 20 years. The original capital was $25,000; it was increased to $35,000 in the late 1800's. The company was composed of some seventeen individuals, mostly residents of Matteawan, N.Y., who had been employed by the Matteawan Co. as iron workers. Robert J. Halgin was president; W. F. Sage Vice-president. The company manufactured Corliss steam engines, and other boilers and machinery on Main Street, near the H. R. Railroad, in Fishkill, N.Y.

The company first leased and subsequently purchased the building which had been used by the Matteawan Co. for the storage of cotton. They fitted up and occupied this place temporarily until another brick structure, one hundred and twenty feet by forty feet, two stories, was erected and ready for use in 1853. The old building is still used as a storehouse. The company engaged in the manufacture of stationary and marine engines and steam traction engines, besides doing a general machine business, in Fishkill-on-the-Hudson, N.Y.



A "Mills" steam traction engine was built in 1879 by the Fishkill Landing Machine Co. of Fishkill-on-the-Hudson, N.Y. They had patents covering all the essential elements of this engine, and the "Mills" threshers and locomotive steam traction engines. Fishkill Landing Machine Co. was incorporated in February, 1853, and its charter was renewed at the expiration of 20 years. Still, very little is known about the company's products, and only this illustration survives.

Frick Co.

George Frick, who established the Frick Co., was born in Lancaster County, Pa., on a 500 acre farm purchased in 1733 by his great-great-grandfather from the Penns. George's grandfather, Abraham Frick, was a Captain in the Revolution.

When George Frick was nine years old, his father left the home of his Swiss ancestors in Lancaster County and moved the family to the Cumberland Valley, near Quincy, Pa.

In 1848 George Frick began manufacturing grain cleaners and horsepowers in a weaving mill at Quincy. There, two years later, he constructed his first steam engine. This was mounted on a wooden frame and delivered two horsepower. In 1851 or 52 he built a shop on a farm near Ringgold, and in 1853 established the Frick Co.

An engineering genius, George Frick undertook to ease the labor of men and animals with power machinery. He became a pioneer builder of four essential kinds of equipment: steam engines, grain threshers, sawmills, and refrigerating systems. His portable and steam traction engines were among the first in this country, and were followed by Corliss steam engines in sizes up to 300 horsepower. Beginning with the hand cranked "fanning mills" of the 1840's, he started successive improvements which led to the wonderful steel threshing machines and peanut pickers of today. Frick sawmills, introduced in 1875, were later built in quantities up to a thousand or more a year. Frick refrigerating, air conditioning, ice making and quick-freezing systems have set the standard of dependability since 1882.

In the mid-1870s the Frick Co. began building its own portable sawmills. The Centennial Exposition in Philadelphia, the engineering event of 1876, gave the highest award in its class to a Frick farm engine, which carried the "Eclipse" trademark for the first time. In 1880 a Frick engine triumphed over 25 others from America, England, and Europe at the great exhibition in Melbourne, Australia.

In 1885 the partnership was dissolved and Frick Co. was chartered as a Corporation. Three years later George Frick retired; for 43 years he had been active, building the foundations of the industrial greatness both of his firm and of Waynesboro, Pa. His life's work is exemplified by his motto: "Be sure you are right, then do it quickly!"

The Frick or Eclipse steam traction engine was built in Waynesboro, Pa., from 1880 until 1936. The Frick steam traction engine had a independent mounted boiler, a center crank engine, clearance for belting to the rear, removable engineer's platform and encased gearing.

In 1894 the East St. Louis Ice and Cold Storage plant, t largest of its kind, installed a 125-ton Frick plate ice maki system and two compressors of 36-in. stroke, driven by co pound-condensing engines. A third engine of the same type dro the auxiliaries through a big jackshaft.

Two years later Frick Co. built for Armour and Co. the large refrigerating machine in the world. This 30-foot giant had a bo of 27 inches and a stroke of 48, and with its tandem-compou engine measured 59 feet long.

Its high-pressure steam cylinder had a diameter of 26 inche its low-pressure cylinder, 50; the stroke of the engine was al four feet.

The big unit was operated day and night, continuously, for years, and was in reserve service another 5 years. Its rate capacity at 60 r.p.m. was 350 tons. (One ton of refrigeration is th cooling effect obtained by melting a ton of ice every 24 hours The speed could be increased to 70 r.p.m.

In developing new lines of machines, the tendency is to begi with large units having slow-moving parts. History shows this t have been the case with tractors, combines, Diesel engines, an monia compressors, and other equipment.

After the heavy models have shown what can be done, demand arises for smaller sizes, with lighter parts running higher speeds.

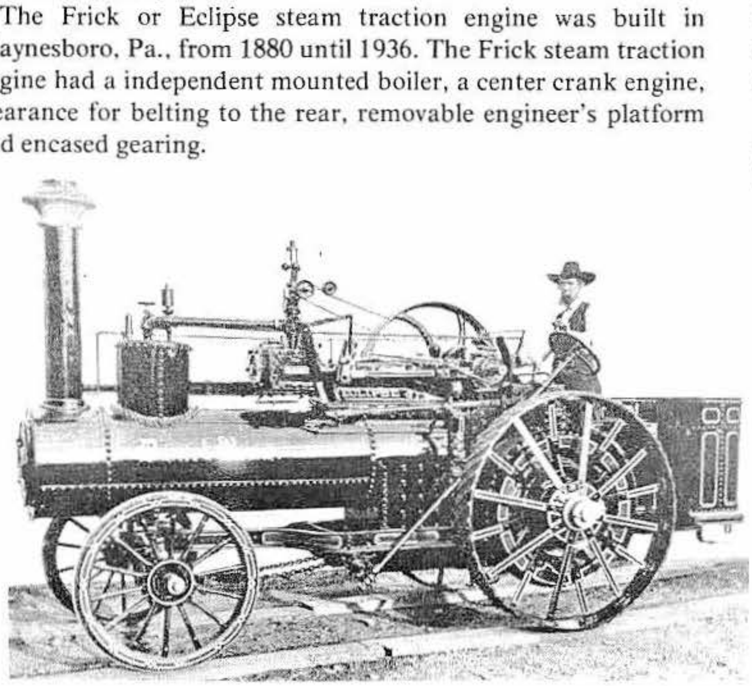
Frick Co. in this decade anticipated the needs of hotels, restau rants, hospitals, and various industrial plants, for refrigeratin systems of moderate capacity.

As steam power was not always available, other types of driv were introduced. These adaptable machines paved the way for th wide acceptance enjoyed by mechanical refrigeration a generatio later.

Approximately half the artificial ice skating rinks on the con tinent, used Frick equipment.

The Frick Company made the following: Eclipse water wago and sprinkler attachment; the "New Frick" thresher, with win stacker, self-feeder and weigher with cross conveyer; the Eclips portable engines; the Eclipse stationary engine and boiler; po table circular saw-mills; the "Chase" automatic shingle an heading machine, edger and swing cut-off, and hay presses fo baling hay, straw and alfalfa. Refrigerating, air conditioning, ic making and quickfreezing systems have set the standard c dependability since 1882.

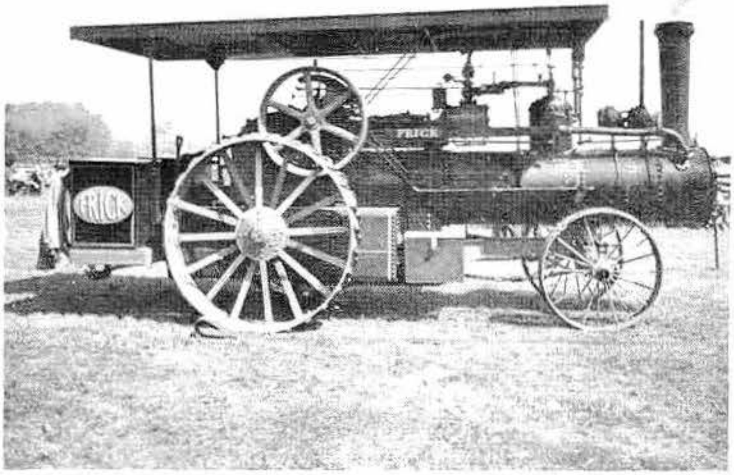
Today the Frick Co. is still in business making refrigeratin machinery and air conditioning. Their home office is Waynes boro, Pa.



Frick Company Waynesboro, Pa.

This is the identical engine, the Daniel Boone—competitors will never forget the name—that was shown throughout the circuit of state and principal county fairs, and took 39 first premiums in 1885. The reason it did not take more is because it could not be shown in more than one place at the same time. Such a stir and shaking of dry bones all along the line in the steam traction engine business was never seen before or since.

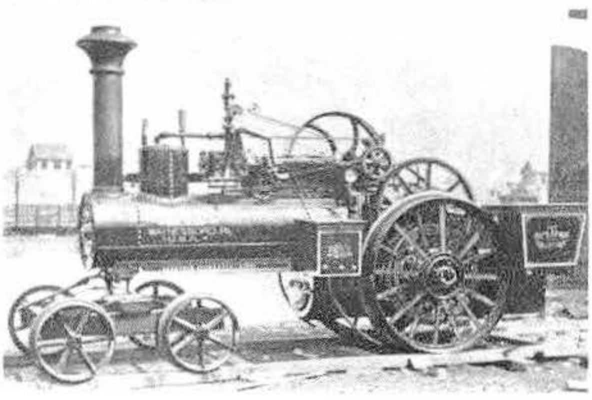
Frick Co.

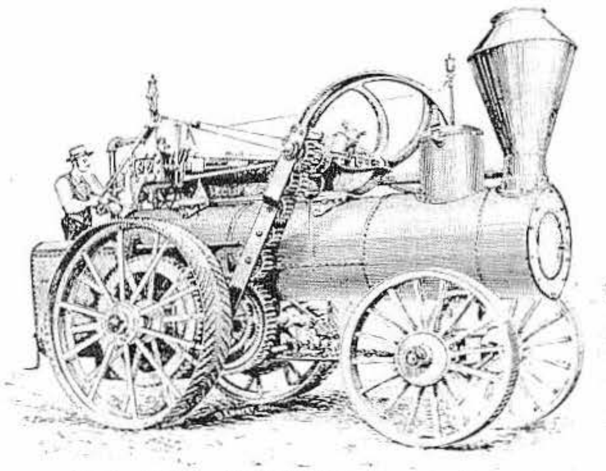


This 14 H.P. Frick steam traction engine, built by Frick & Co. of Waynesboro, Pa., in 1906, is owned by Tracy N. Lewton. It is at the Tri-State Historical Steam Engine Assn. show at Hookstown, Pa. George Frick, who established the Frick Co., was born in Lancaster County, Pa., on a 500-acre farm purchased in 1733 by his great-great-grandfather from the Penns.

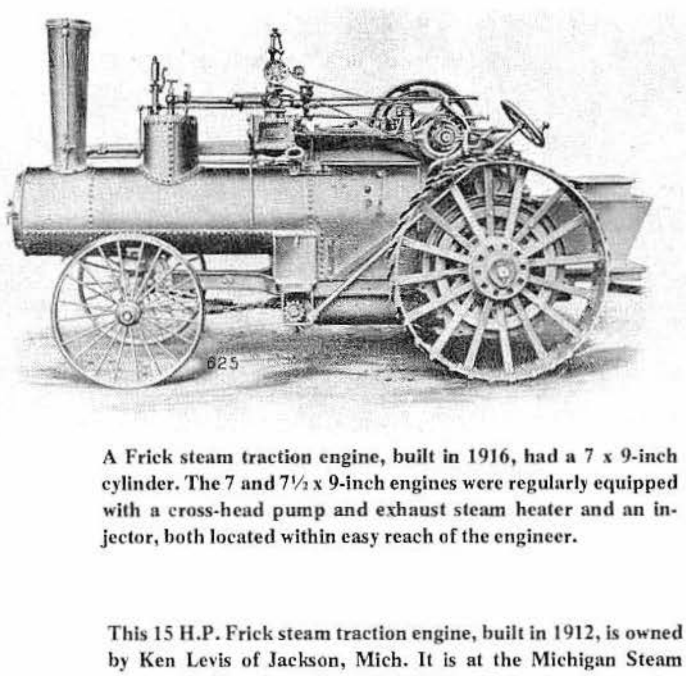
Thomas Camp is shown at the wheel of a Frick steam traction engine near Covington, Georgia, in 1881. The following year, 43 Frick steam traction engines were shipped in one day to Mr. Camp. He was still selling Frick machinery in the South in the late 1920s.

This 15 H.P. Frick steam traction engine, built about 1885, is arranged with flanged wheels for a logging railway using wooden tracks. In 1848 George Frick began manufacturing grain cleaners and horsepowers in a weaving mill at Quincy. There, two years later, he constructed his first steam engine. This was mounted on a wooden frame and delivered two horsepower. In 1851 or 52 he built a shop on a farm near Ringgold, and in 1853 established the Frick Co.



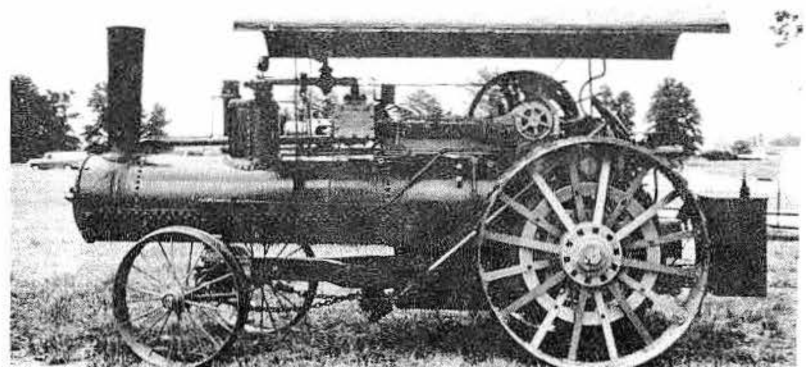


In the third model of the Frick steam traction engine a train of gears replaced the chain drive. The engine was later turned around, placing the shaft above the driving wheels.

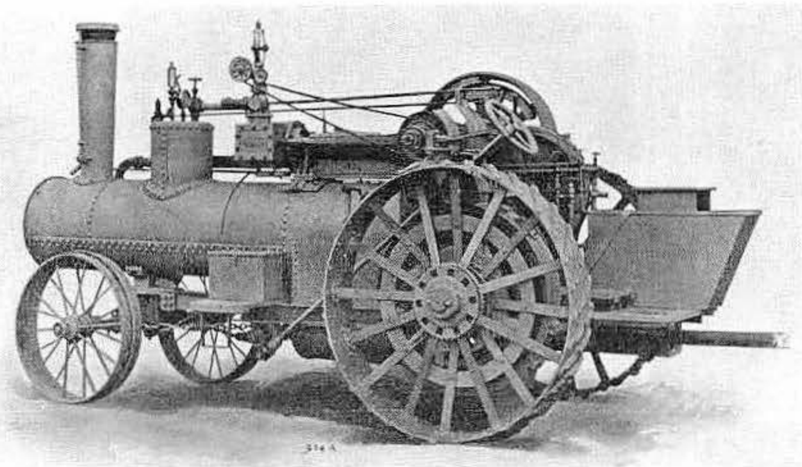


A Frick steam traction engine, built in 1916, had a 7 x 9-inch cylinder. The 7 and 7½ x 9-inch engines were regularly equipped with a cross-head pump and exhaust steam heater and an injector, both located within easy reach of the engineer.

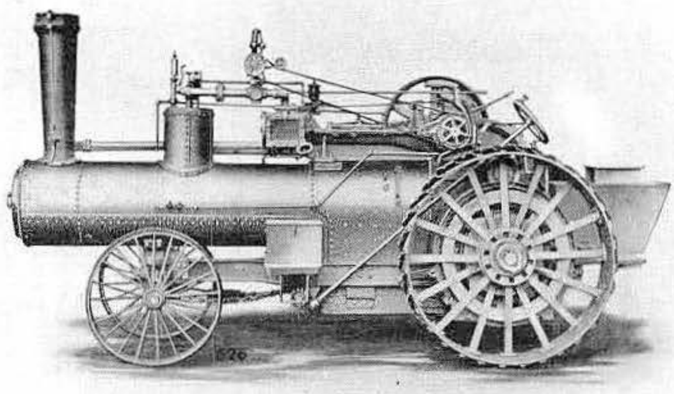
This 15 H.P. Frick steam traction engine, built in 1912, is owned by Ken Levis of Jackson, Mich. It is at the Michigan Steam Engine & Threshers show at Mason, Mich. An engineering genius, George Frick undertook to ease the labor of men and animals with power machinery. He became a pioneer builder of four essential kinds of equipment: steam engines, grain threshers, sawmills, and refrigerating systems.



Frick Co.



This picture, from a 1906 Frick catalog, shows how thoroughly the gearing is protected and encased in tight dustproof covers. This feature was of great value, as it insured long life to the gears, noiseless operation, and absence of undue wear.

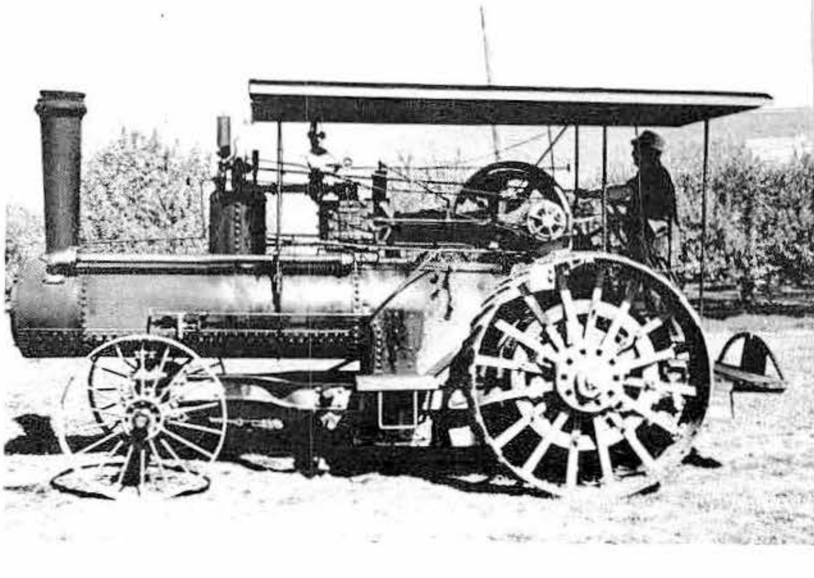


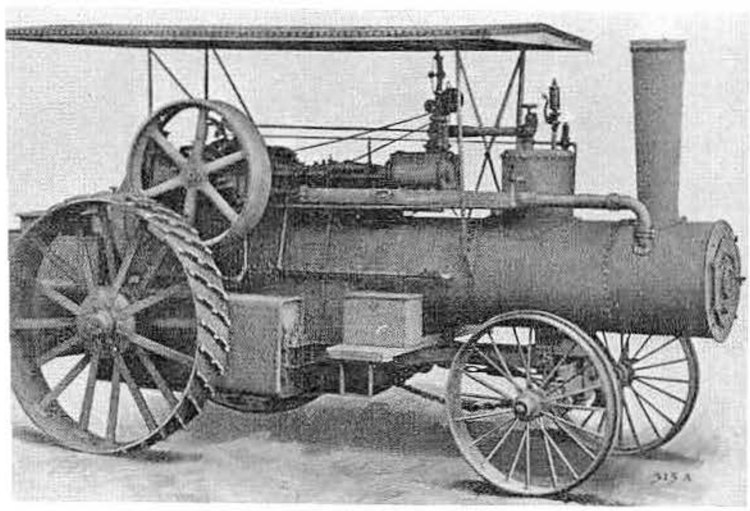
The Frick steam traction engine built in 1916, had a 8 x 10-inch cylinder. This engine successfully and economically drove small threshers, balers, clover hullers and like machinery, and provided the most dependable power for plowing and deep cultivation, drawing three or four 14-inch bottom plows, depending upon the depth and kind of soil.

Frick Company *Waynesboro, Pa.*

This 16 H.P. Frick steam traction engine, built in 1915, was owned by Earl Maranka of Dowagiac, Mich. This engine is a single cylinder, rear center mount. It was sold for $2,000 in May, 1973.

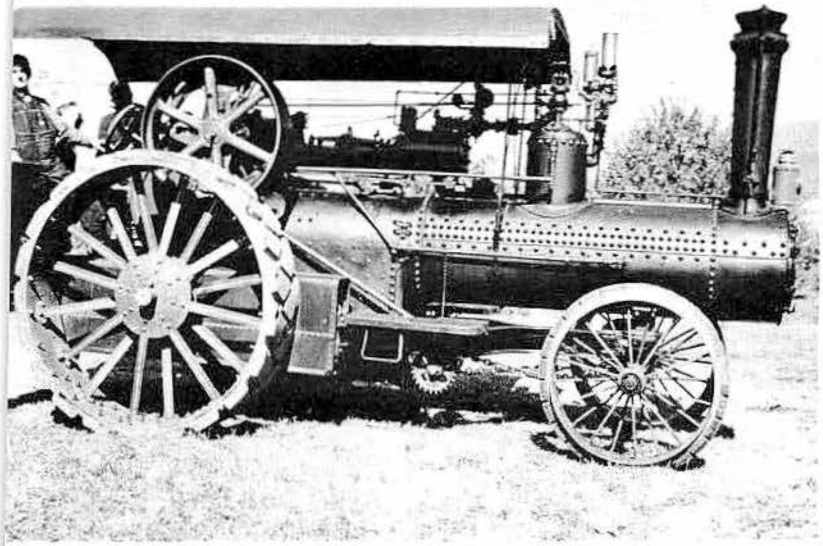
This 16 H.P. Frick steam traction engine, built in 1914, is owned by Dennis Smith of Martinsburg, Pa. It is at the Morrison's Cove Pioneer Power Reunion at Martinsburg. Frick Co. sawmills, introduced in 1875, were built in quantities up to a thousand or more a year.

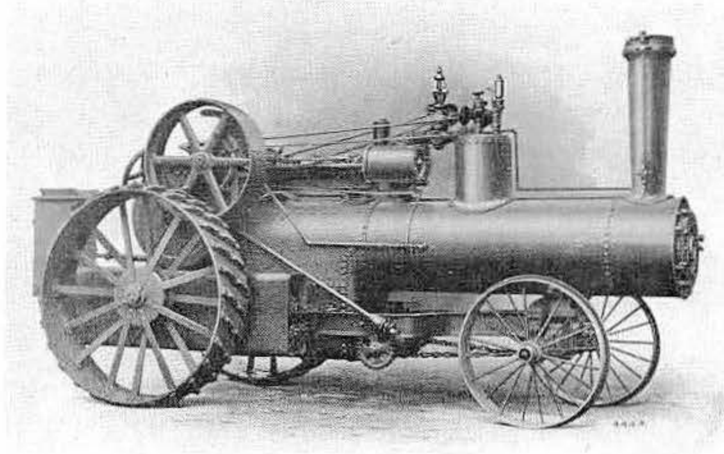




This picture, from a 1906 Frick catalog, shows the fly-wheel, friction clutch, feed-water heater, and direct-connected and positive-feed pump driven from the engine crosshead. The belt could be run forward or back.

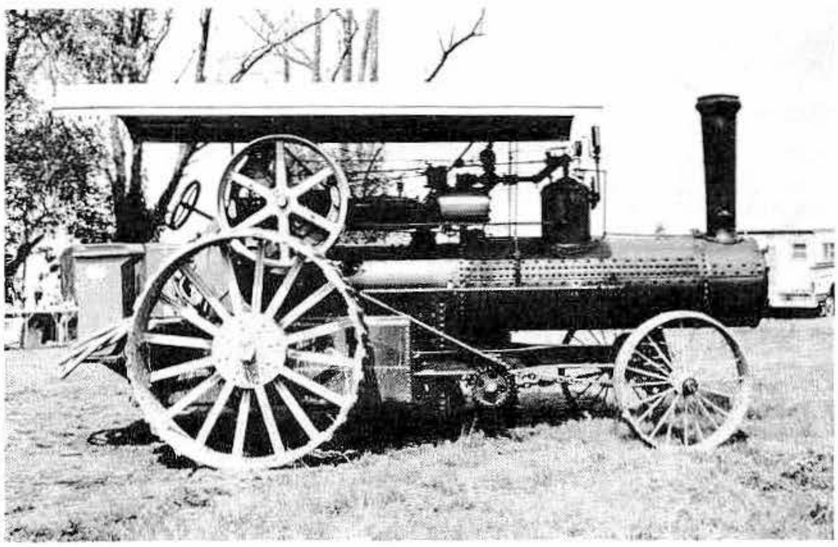
Frick Co.





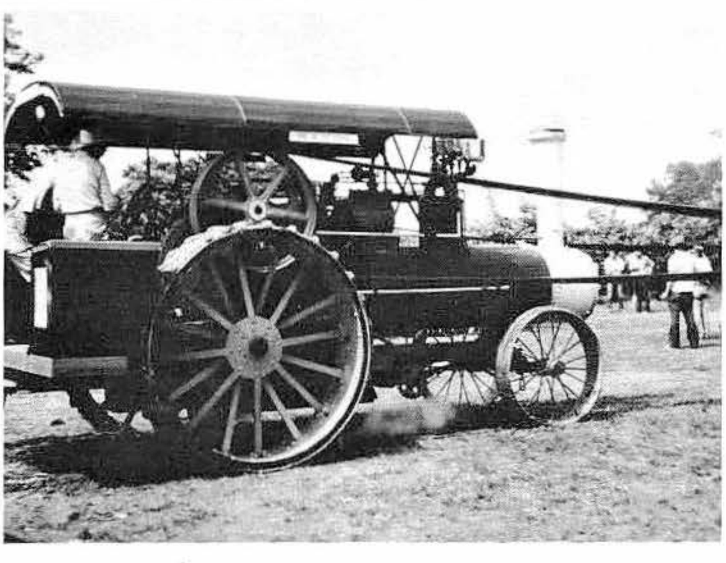
This Frick steam traction engine, built in 1916, had an $8\frac{1}{2}$ x 10-inch cylinder. The water carrying capacity of the axle tank was 105 gallons. This engine's approximate weight was 15,500 pounds. The working steam pressure was 135 pounds.

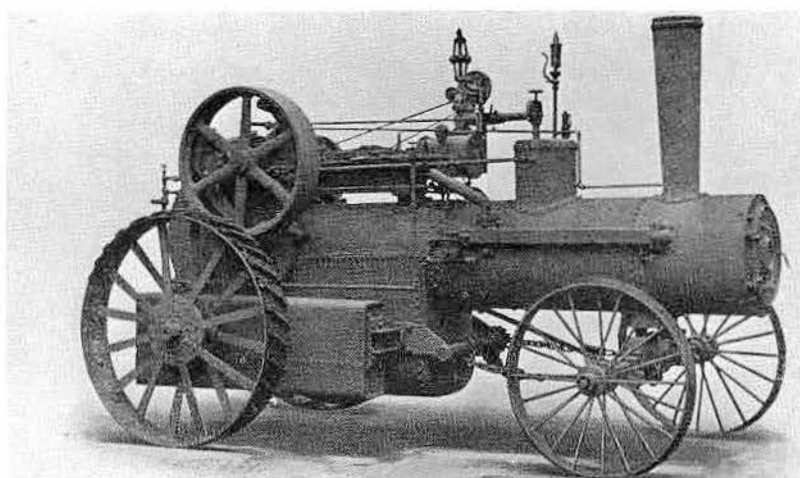
This 16 H.P. Frick steam traction engine, built in 1923, is owned by Lloyd Calhoun of Everett, Pa. It is at the Morrison's Cove Pioneer Power Reunion at Martinsburg, Pa. In 1880 a Frick engine triumphed over 25 others from America, England, and Europe at the great exhibition in Melbourne, Australia.



This 16 H.P. Frick steam traction engine, owned by John Sells of Lisbon, Ohio, is at the Stumptown Steam Threshers Assn. show at New Athens, Ohio, every year. Note the side mounted water tank.

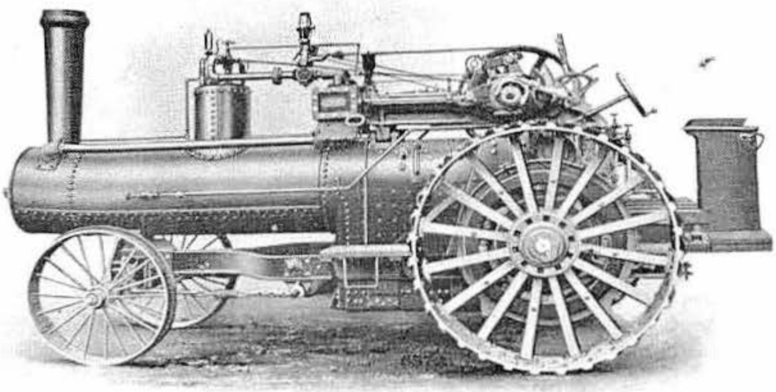
This 18 H.P. steam traction engine, built in 1916, is owned by Newt Howell of Shelbyville, Tenn. It is at the Tennessee-Kentucky Threshermen's Assn. show, at Adams, Tenn. The Frick steam engines sold for the following in 1883: 8 H.P., $1,150; 10 H.P., $1,300, and 12 H.P., for $1,400.



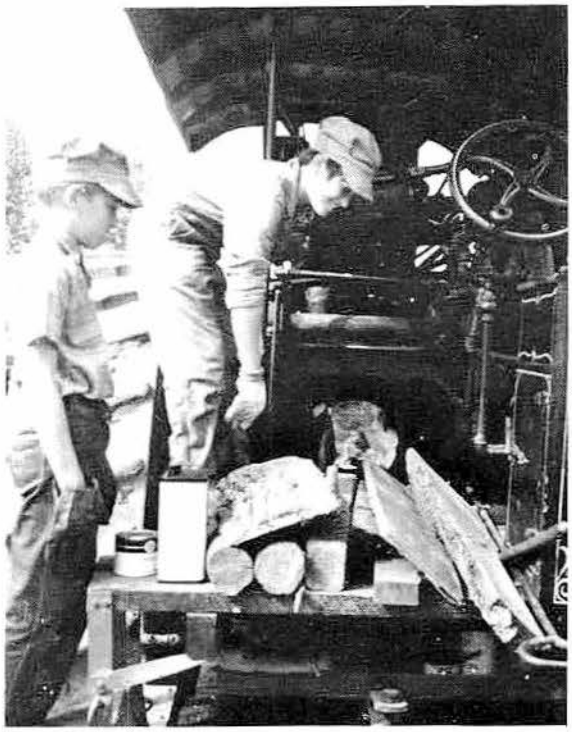


Built in 1906, this engine had a friction clutch, new reverse motion, steering attachment, pump heater and injector, and movable platform. The boiler was of steel frame, with a patent expansion connection between engine and boiler.

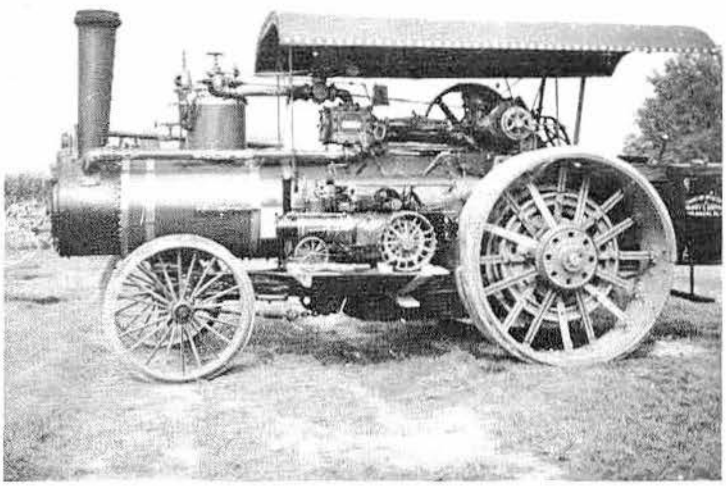
Frick Co.



A 1916 Frick steam traction engine with a 6¾ x 9-inch double cylinder. This engine used the balanced valves, vertical reverse control. It was a light weight—its approximate weight was 16,000 pounds.

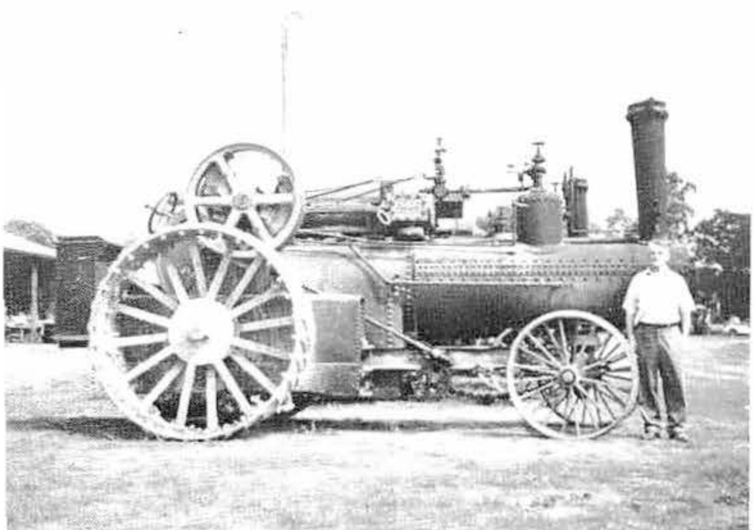


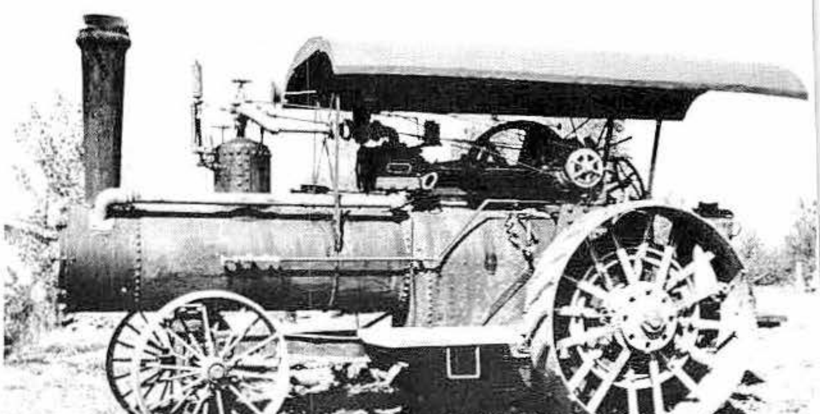
Curtis Weaver, 12 years old, and Van Rayhorst, 13 years old at the time, fire the 45 H.P. Frick built in 1922 and owned by Martin M. Weaver of Leola, Pa. In 1885 the partnership was disolved and Frick Co. was chartered as a corporation. Three years later George Frick retired; for 43 years he had been active, building the foundations of the industrial greatness both of his firm and Waynesboro, Pa. His life's work is exemplified by his motto: "Be sure you are right, then do it quickly."



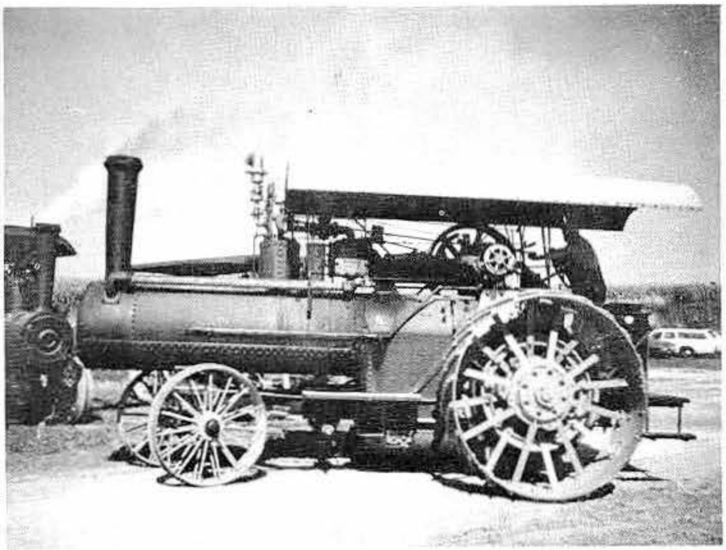
This 60 H.P. Frick steam traction engine, built in 1921, is owned by Harvey Hoffman of Rheems, Pa. The engine is at the Rough & Tumble Engineers Historical Assn. show at Kinzer, Pa. Harvey Hoffman bought the engine new in 1921 and today (1975) still owns and uses it, making it a one owner, (very rare). Gifted craftsmen created authentic operational scale models of steam traction engines that work exactly like the original engine. One is shown here, posed beside the real machine.

This 60 H.P. Frick steam traction engine, built in 1921, is owned by Jim Hessong of Smithburg, Md. It is in action at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa.

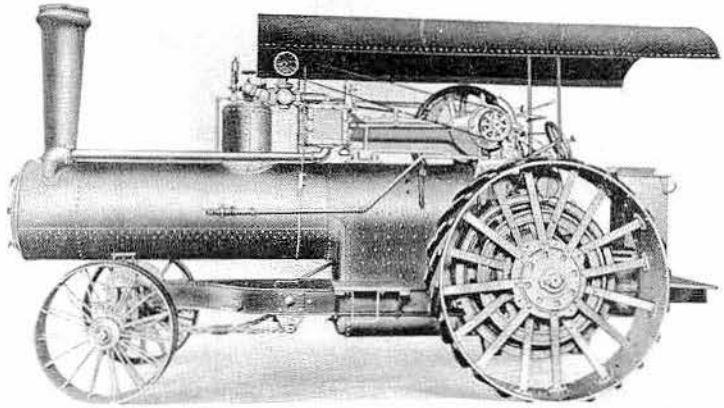




This 60 H.P. Frick steam traction engine, built in 1925, is owned by Lester Beach of Martinsburg, Pa., and is at the Morrison's Cove Pioneer Power Reunion at Martinsburg. The Frick or Eclipse steam traction engine was built in Waynesboro, Pa., from 1880 until 1936.

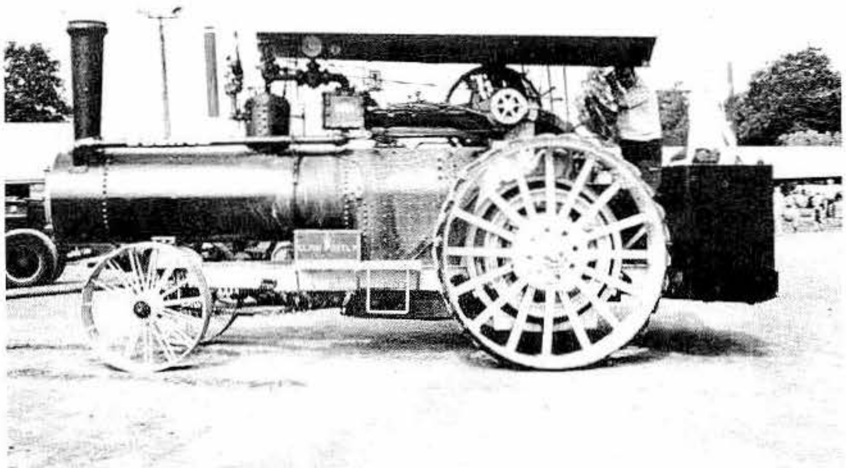


This 65 H.P. Frick steam traction engine, built in 1916, is owned by Emanuel Nafe of Glen Rock, Pa. This engine is at the Maryland Steam Historical Society show at Upperco, Md. The Frick engine had the friction clutch mounted on an independent steel frame work.



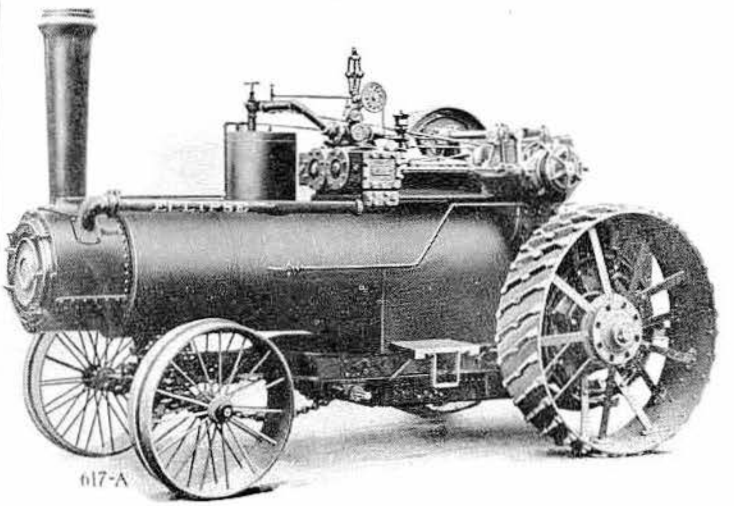
A 65 H.P. Frick steam traction engine, built in 1916 used a 9½ x 10-inch cylinder. In addition to the independent mounting, center-crank engine, the 9½ x 10 was furnished with an open bottom boiler, improved reverse, and balanced valve.

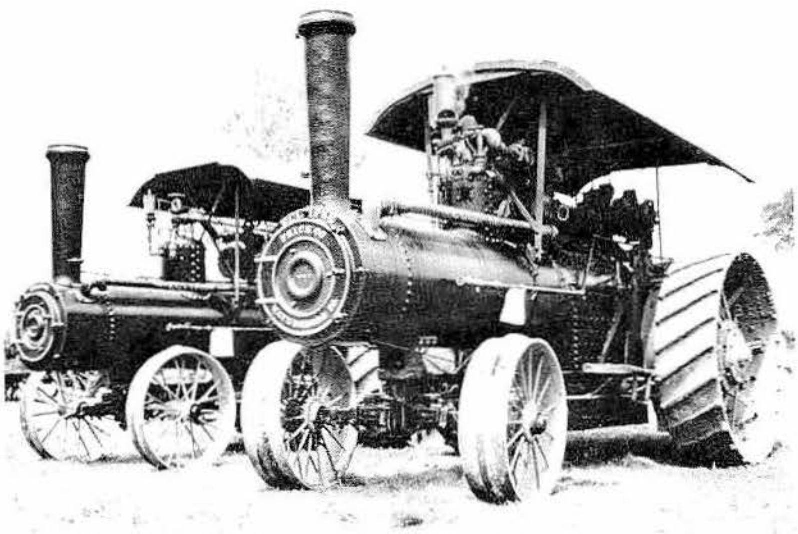
This 65 H.P. Frick steam traction engine, built in 1923, is owned by Clyde Costly of Wellsboro, Pa. This engine is at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa. Clyde Costly's Frick is engine # 23999. It has a 9½ x 10-inch cylinder.



Frick Company *Waynesboro, Pa.*

A 7 x 10-inch double cylinder Frick steam traction engine, built in 1916. The water carrying capacity of the axle tank was 130 gallons. Each piston had two packing rings. The approximate weight was 20,000 pounds. Today the Frick Co. is still in business making refrigeration machinery and air conditioning units. Approximately half the artificial ice skating rinks on the continent have used Frick equipment.





Here are two Frick steam traction engines in a line at the Rough and Tumble Engineers Historical Assn. annual show. The Frick was made in Waynesboro, Pa. A lot of these engines are left today in good show condition.

Gaar - Scott Co.

Abram Gaar was founder of the firm of Gaar, Scott & Co. in 1836, designated as a family corporation. At one time in its history there were some outside stockholders, but the company was mostly in the hands of the Gaars and their descendants. The Gaar family was one of the oldest and most substantial in the city of Richmond, Ind.

Abram Gaar was born near Richmond, Indiana. He was a cabinet maker and millwright and worked for a time in the machine works known as the Spring Foundry owned by J. M. & J. Hutton. Gaar purchased the Spring Foundry in 1849 and founded the firm of A. Gaar & Co., continuing an active member until his death in 1894.

He was succeeded by his son John Milton Gaar, who was born in Richmond in 1823 and who worked in the Spring Foundry as early as 1842, when that concern was engaged in building the old "chaff pilers" or "ground-hog" threshers. He grew up with the threshing machine business and developed his plant as that industry developed. His partner, William G. Scott, was a Virginian, whose parents had moved to Richmond in 1827. Scott was the business man of the firm and John M. Gaar devoted his time to the mechanical end. The Gaar-Scott Co. was incorporated in 1870.

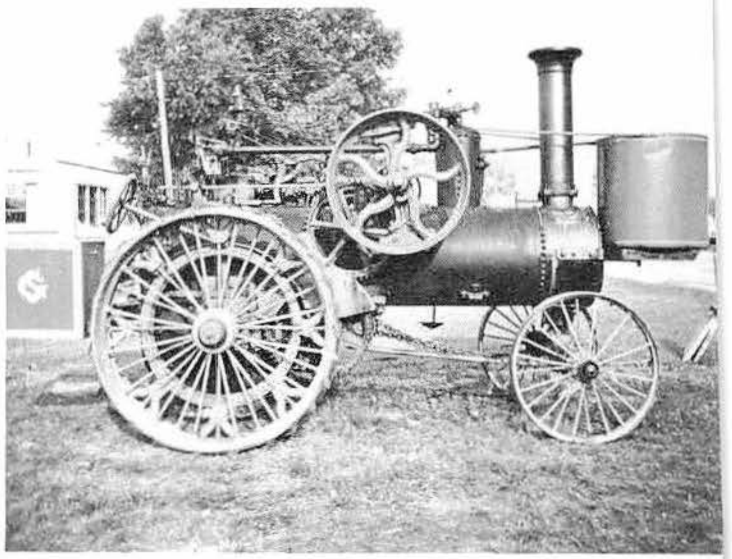
The Gaar-Scott Co. made steam traction engines with simple and compound cylinders. The compound had two cylinders which were directly and strongly attached to each other by a projection on the small cylinder and a counterbore on the large cylinder, without any open space between them. This insured their being always in perfect alignment, and in this position they were bolted rigidly together. If, for any reason, access was desired to the inside of the cylinders, the small cylinder could be easily removed and then replaced in its original position, and it would again be in perfect alignment with the large cylinder, with the connection as firm as if both cylinders were cast together.

There was no stuffing box to pack between the cylinders and only one steam joint, which was an advantage over compound cylinders that had an open space between them. In the compound cylinder, they used a brass bushing between the two cylinders which took the place of packing around the piston rod. The five grooves in the cross section of the bushing filled with water supplied by the condensation of occasional drops forming on the piston rod as it passed through this bushing, which was cooler than the other chambers of the cylinder. This made a steam packing which was durable and effective and simple and easily replaced. A plate and three bolts held the bushing in position. Three set screws also held the center head in position.

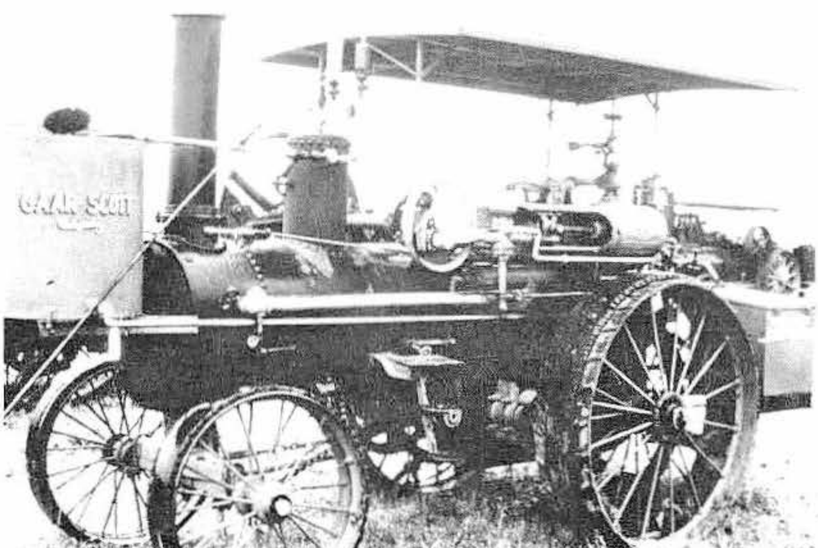
A small steam pipe, with a valve, was put on the boiler for the purpose of carrying the steam direct to the large cylinder, so that in an emergency or hard pull, the engineer could turn on steam and get the full direct pressure of steam in the large cylinder, for a limited time, supplementing the exhaust steam from the small cylinder. The cylinder was jacketed in conformity with the boiler and dome.

The Gaar-Scott Co. made the following: Steam traction engines of simple and compound cylinders; plain portable steam engines; the Gaar-Scott 3-way crank thresher; rice field Queen thresher; clover hulling outfit; water tanks; Plantation circular saw mills; Pony circular saw mills, and the standard circular saw mill.

In 1911 Gaar-Scott became part of the Rumely Company. Then the Rumely Products Co. became part of the Allis-Chalmers Corp.

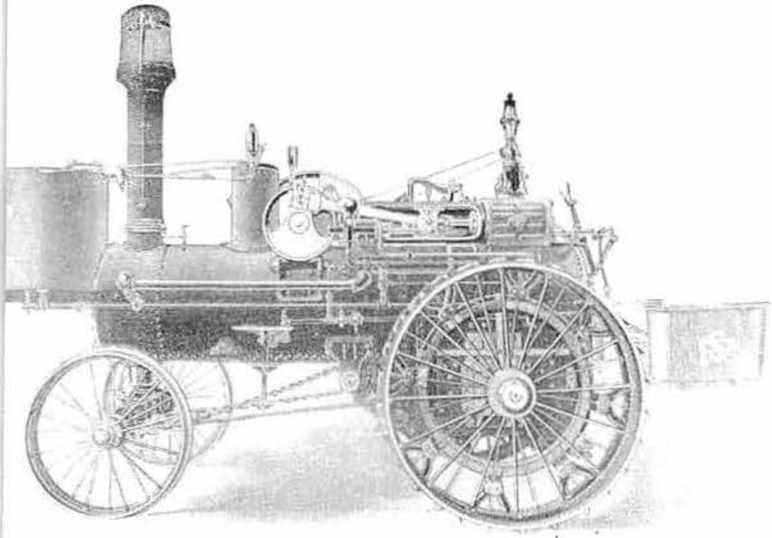


This 13 H.P. Gaar-Scott steam traction engine, built in 1909, is owned by Charles Hirshey, of Lindgrove, Ind. This engine is at the Darke County Steam Threshers show, Greenville, Ohio.

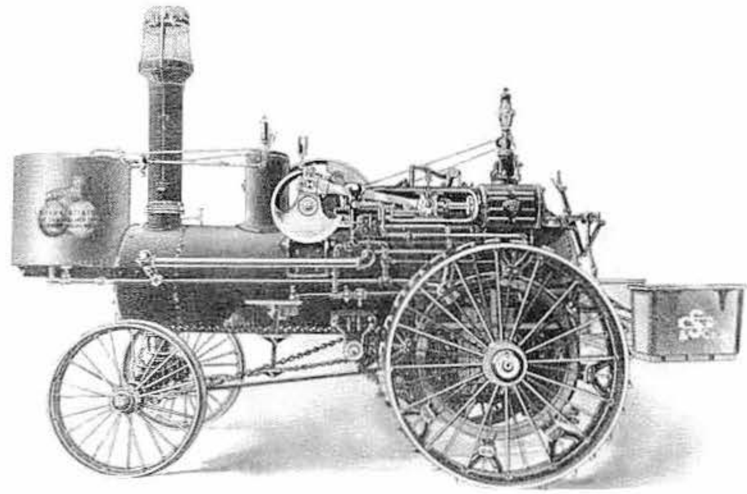


This 16 H.P. Gaar-Scott steam traction engine, built in 1904, was owned by Earl Marhank of Dowagiac, Mich., but was sold for $2,250 in May, 1973. Nick Lederle bought this engine and keeps it at his machine shop in Leland, Mich.

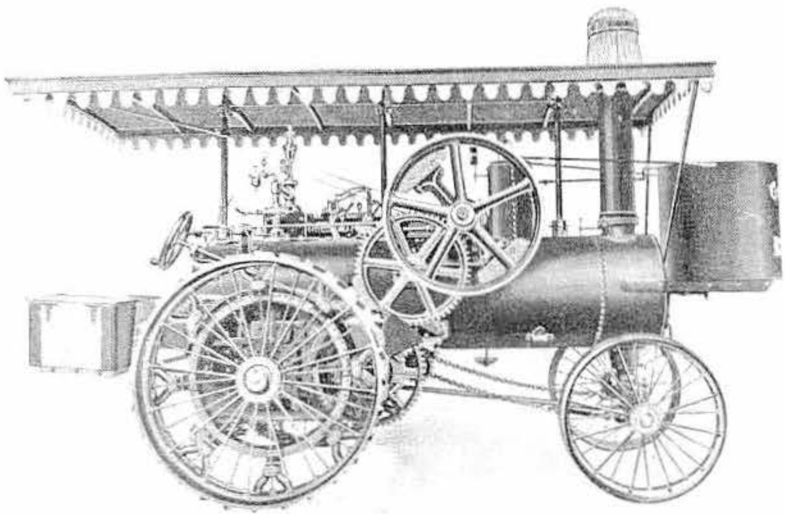
Gaar - Scott Co.



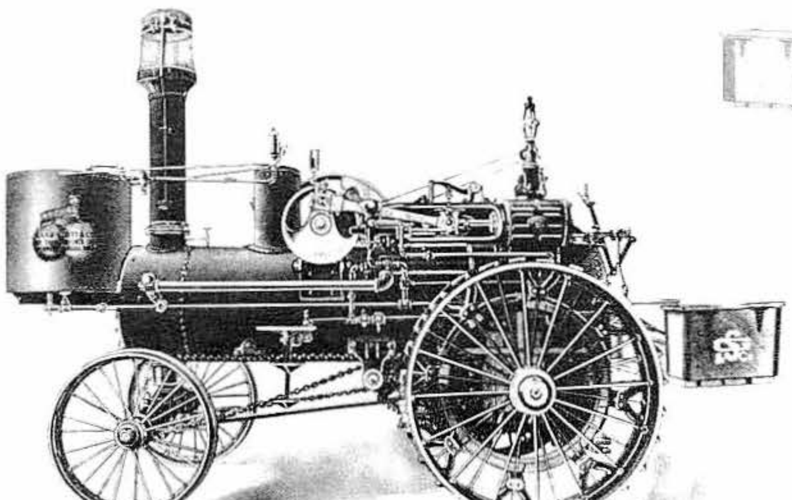
A coal or wood-burning 13-16 and 18 H.P. Gaar-Scott steam traction engine, pictured in a 1906 Gaar-Scott catalog. All the boiler plates were from open hearth homogeneous steel that had been tested to 60,000 lbs. tensile strength. After the engines were finished they were fired up and run under heavy steam pressure, which assured that all boilers were without a flaw or leak when they left the plant.



The 1908 model 13-16 and 18 H.P. Gaar-Scott steam traction engine. This engine had the regular coal and wood-burning boiler and regular traction engine gear. Jackets were furnished on this engine only as ordered. Cabs were also extra, in either long or regular style.



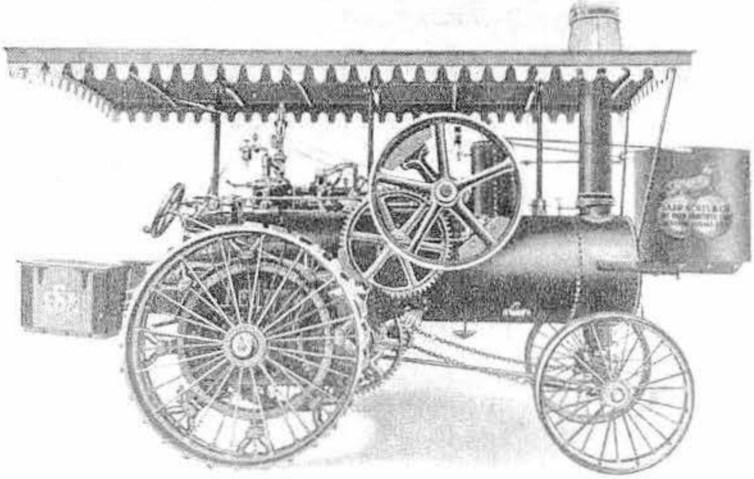
The long cab attachment is shown on this 13-16 and 18 H.P. Gaar-Scott steam traction engine of 1906. Abram Gaar was founder of the firm of Gaar-Scott & Co. in 1836.



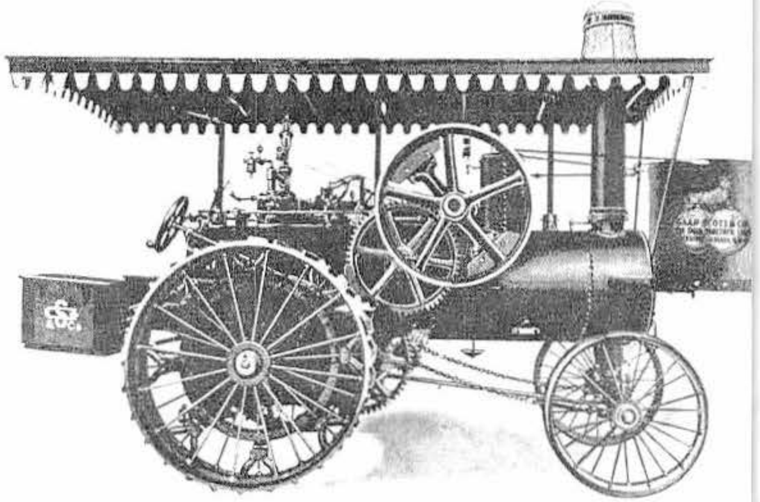
The 1910 model 13-16 and 18 H.P. Gaar-Scott steam traction engine had a large steam dome with arched top which furnished an abundance of dry, live steam. This was taken from near the top of the dome and went to the steam chest through the dry pipe inside of the boiler shell without any deterioration in dryness or pressure. Just inside the hand-hole, above the fire-door, a cock was placed in the elbow of this dry pipe for draining off any condensation after the engine was shut down.

This 16 H.P. Gaar-Scott steam traction engine, built in 1909, is owned by Neil McClure of Colchester, Ill. This engine is in action at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa.

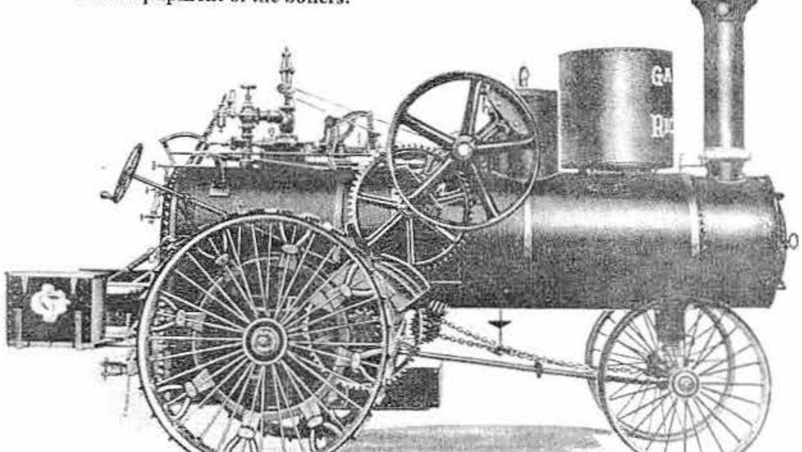
Gaar - Scott Co.



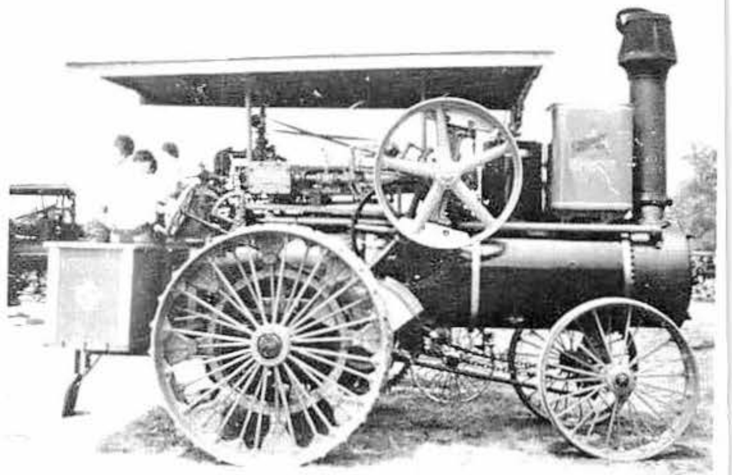
A 13-16 and 18 H.P. Gaar-Scott steam traction engine was pictured in a 1908 Gaar-Scott catalog. The boilers had every convenience for cleaning in the way of hand-holes and bottom blow-off valve. A surface blow-off cock with pipe attached was provided, by which all scum and floating sediment could be carried off, avoiding foaming from this cause. All modern safety appliances such as fusible plug in the crown sheet, glass water gauge, try cocks, reliable steam gauge, and pop safety valve, were part of the equipment of the boilers.



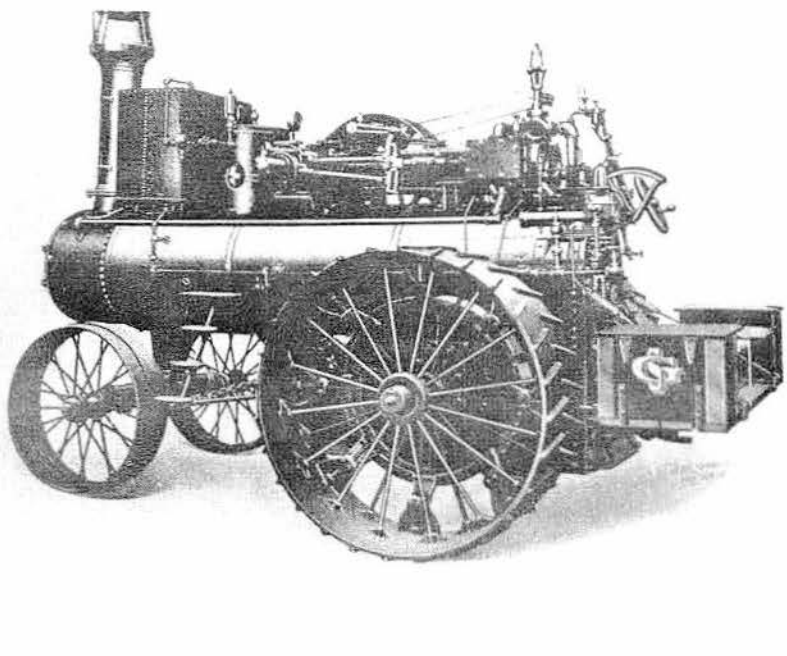
A 13-16 and 18 H.P. Gaar-Scott steam traction engine as pictured in a 1910 Gaar-Scott catalog. Stay bolts of the best refined iron were used to brace the fire-box sheets. These stay bolts were threaded from end to end, screwed in place under pressure of compressed air, and both ends securely riveted over. The stay rods (the usual number being nine, depending on size of boiler) ran from end to end of the boiler, making it very rigid to resist the shifting strains to which the boiler of a traction engine was subjected.



A 16-18 H.P. Gaar-Scott steam traction engine of 1910. The universal boilers, domes and engine cylinders were jacketed in a way that reduced, to a minimum heat radiation and condensation. The covering made a very handsome finish.

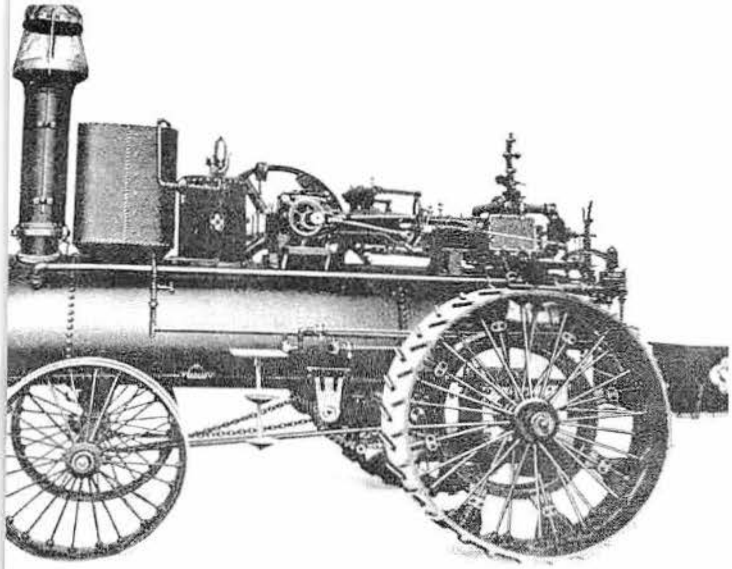


This 18 H.P. Gaar-Scott steam traction engine, built in 1917, is owned by John Holp of Lewisburg, Ohio. It is at the Darke County Steam Threshers show at Greenville, Ohio. The Gaar-Scott & Co. was designated as a family corporation. At one time in its history there were some outside stockholders, but the company was mostly in the hands of the Gaars and their descendants.

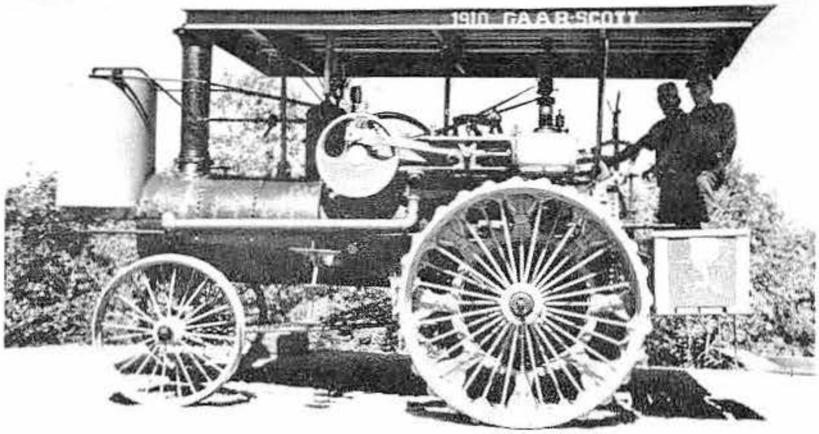


This is a 1910 double cylinder 18 H.P. Gaar-Scott steam traction engine, using a universal boiler. The steam gauge, whistle and other brass goods were of the most approved make. A full equipment of oil cups, glass water gauge, all necessary tools, pipe tongs, combination and other wrenches, hose and oil cans went along with the engines.

Gaar - Scott Co.



A 1910 model 18 and 22 H.P. Gaar-Scott steam traction engine. At the engineer's right, within easy reach, was the steering wheel, and directly forward of it, the band wheel. The worm gear turns the steering roll easily, and the chains have good leverage on the front axle at any angle, straight or cramped. This roll had a spiral surface for the wrap of the chain and gave easier and more positive steering than a smooth roll. The arrangement of the ground wheels, the differential gear and the steering gear provided for short turning, and all other operating parts were where the engineer wanted them to give easy and instant control of his engine. The chain could always be kept taut, with any slack taken up by a turnbuckle.

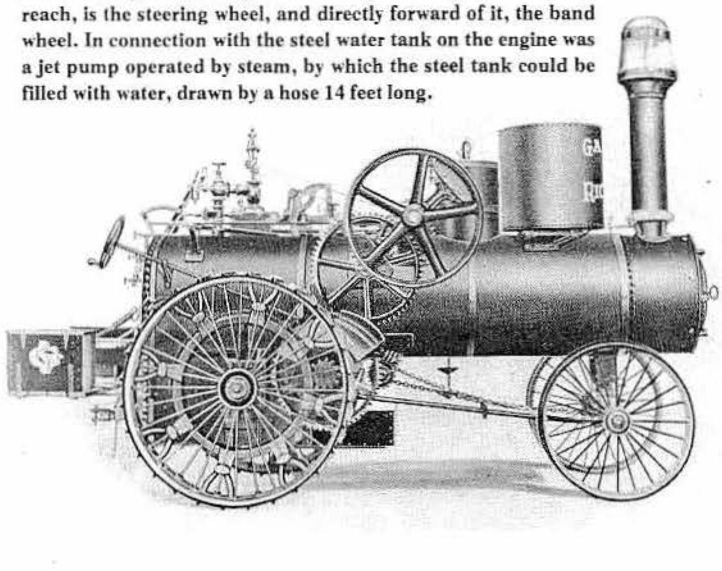


This 18 H.P. Gaar-Scott steam traction engine, built in 1910, is owned by Bernard Root of Columbus, Ohio. This engine is in action at the Richland County Steam Thresher Assn. show at Mansfield, Ohio. This is the cylinder side. The tank mounted up front is the water tank.

This is the fly-wheel side of the 18 H.P. Gaar-Scott steam traction engine owned by Bernard Root of Columbus, Ohio.

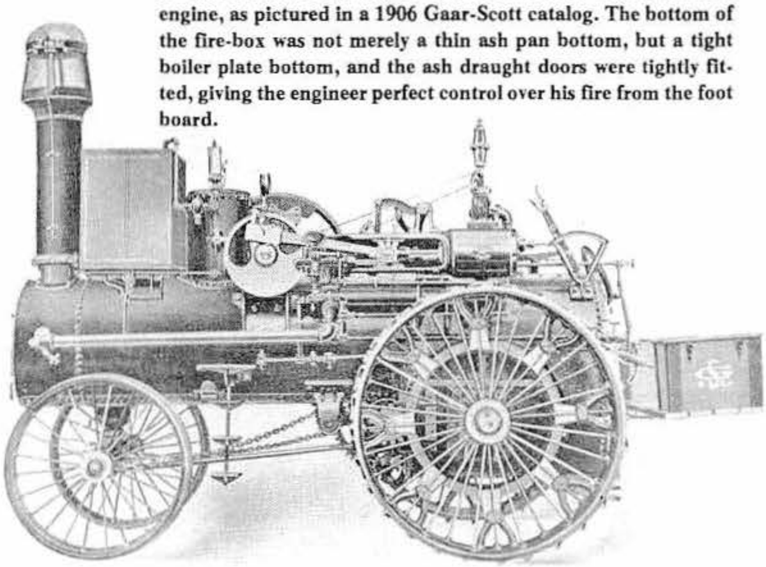
This strange-looking sight is a front view of the 18 H.P. Gaar-Scott steam traction engine owned by Bernard Root of Columbus, Ohio.

This 1908 model 18 H.P. Gaar-Scott steam traction engine is a universal regular gear type. At the engineer's right, within easy reach, is the steering wheel, and directly forward of it, the band wheel. In connection with the steel water tank on the engine was a jet pump operated by steam, by which the steel tank could be filled with water, drawn by a hose 14 feet long.

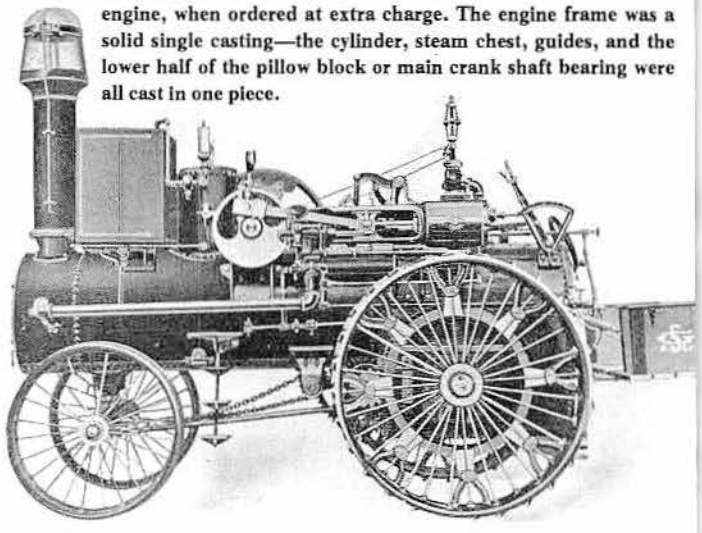


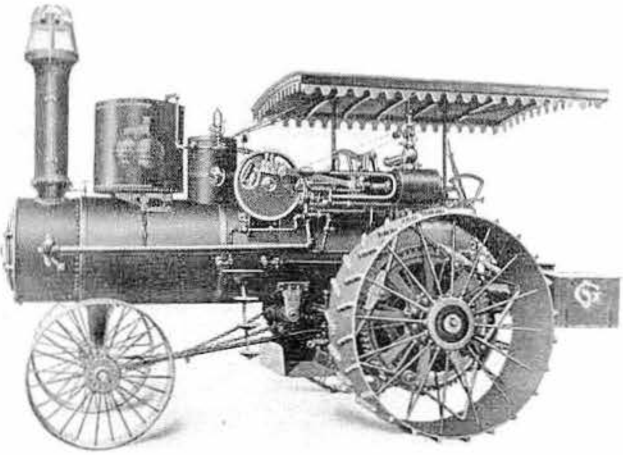
Gaar - Scott Co.

A coal or wood-burning 22 H.P. Gaar-Scott steam traction engine, as pictured in a 1906 Gaar-Scott catalog. The bottom of the fire-box was not merely a thin ash pan bottom, but a tight boiler plate bottom, and the ash draught doors were tightly fitted, giving the engineer perfect control over his fire from the foot board.

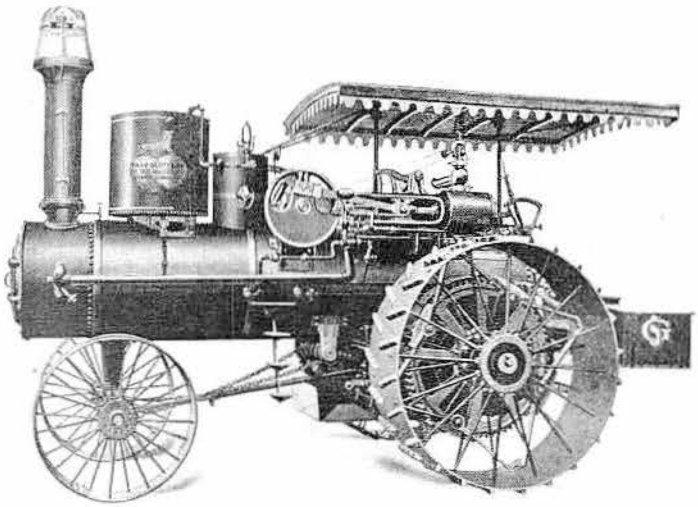


Shown in the 1908 catalog is the 22 H.P. Gaar-Scott steam traction engine. The company could attach a short cab to this engine, when ordered at extra charge. The engine frame was a solid single casting—the cylinder, steam chest, guides, and the lower half of the pillow block or main crank shaft bearing were all cast in one piece.



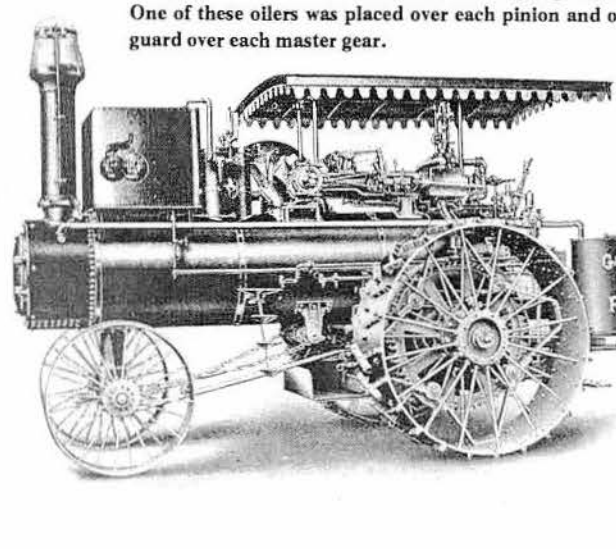


Fitted with a cab, this is the 1908 22 H.P. Gaar-Scott steam traction engine. The cab shown is the one furnished regularly on Universal engines at extra cost. This engine had the heavy gear and steel wheels.

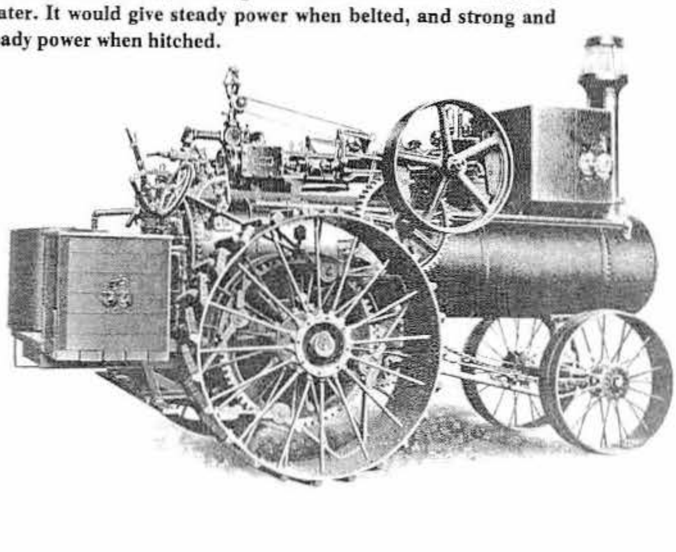


The 1910 model 22 to 32 H.P. Gaar-Scott single cylinder universal boiler steam traction engine. The cab shown was furnished regularly on Universal engines at extra cost. The 32 H.P. engine had an independent pump, while the 22 and 25 H.P. had a cross-head pump.

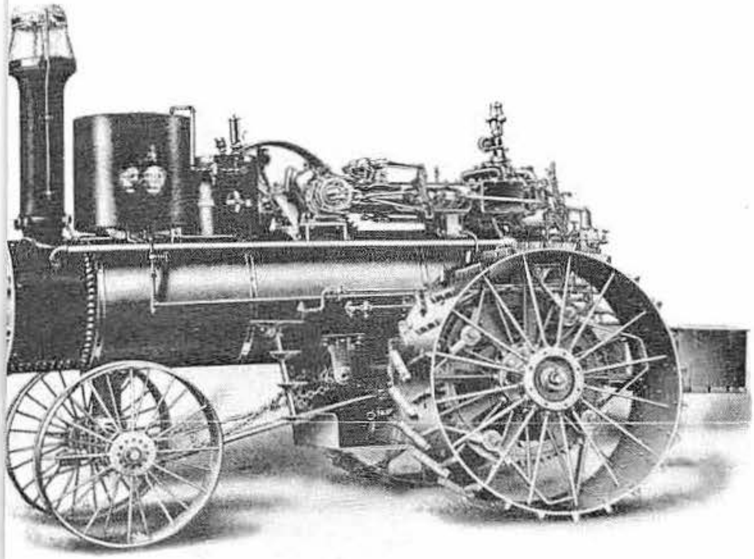
The 22 and 25 H.P. double cylinder steam traction engine was pictured in a 1910 Gaar-Scott catalog. This engine used the universal boiler with heavy traction gearing and steel drivers. Gear oilers were furnished with the heavy gear traction engines outfitted for plowing. These oil cups were designed for the use of inexpensive crude oil. A valve under the cup regulated the feed. One of these oilers was placed over each pinion and one on the guard over each master gear.



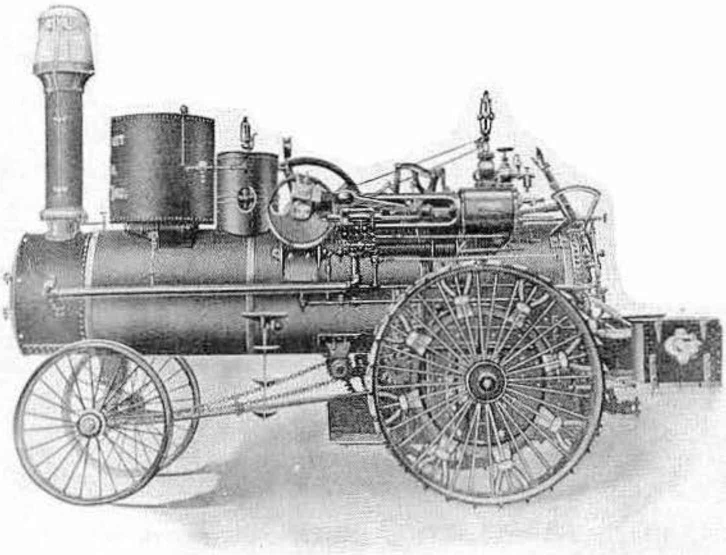
Fitted with heavy plow gearing is this 1910 model 22 and 25 H.P. double cylinder Gaar-Scott steam traction engine. Mounted on the universal boiler, the large tanks held about 11 barrels of water. It would give steady power when belted, and strong and ready power when hitched.



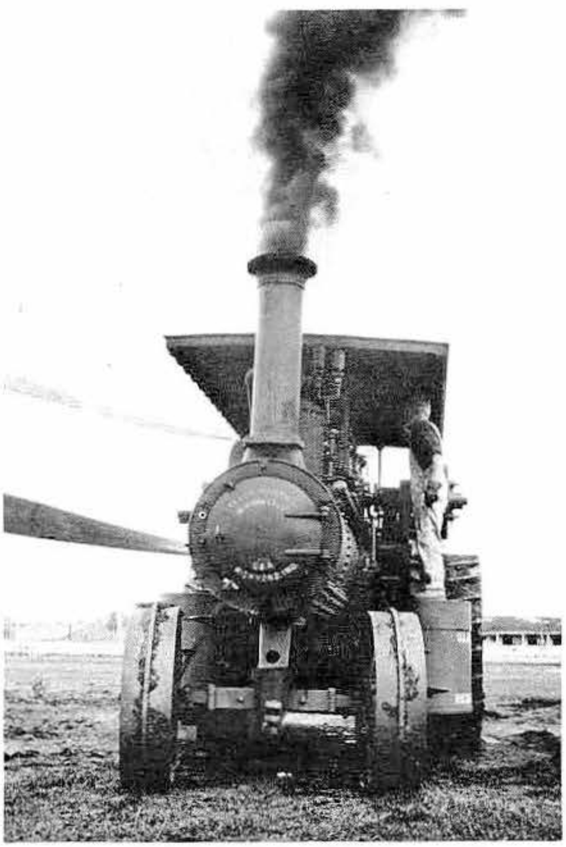
Gaar - Scott Co.



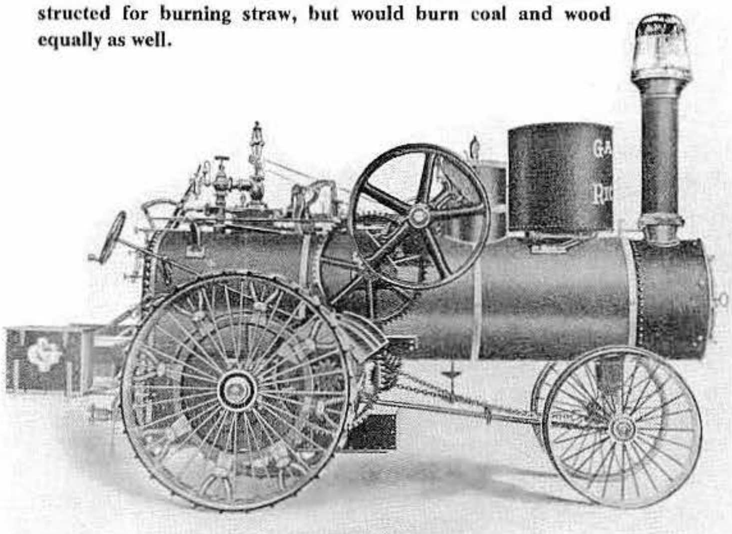
Another view of the 1910 model 22 and 25 H.P. double cylinder Gaar-Scott steam traction engine. The boilers in the double engines were large, quick steamers. The main crank shaft was forged from a single piece of steel, turned to 3$^5/_8$-inch diameter. Its pull was evenly distributed between two heavy self-oiling boxes.



The 1906 straw burning Gaar-Scott steam traction engine came in 16, 18, 22 and 25 horsepowers. The fire-box was specially constructed for burning straw, but would burn coal and wood equally as well.

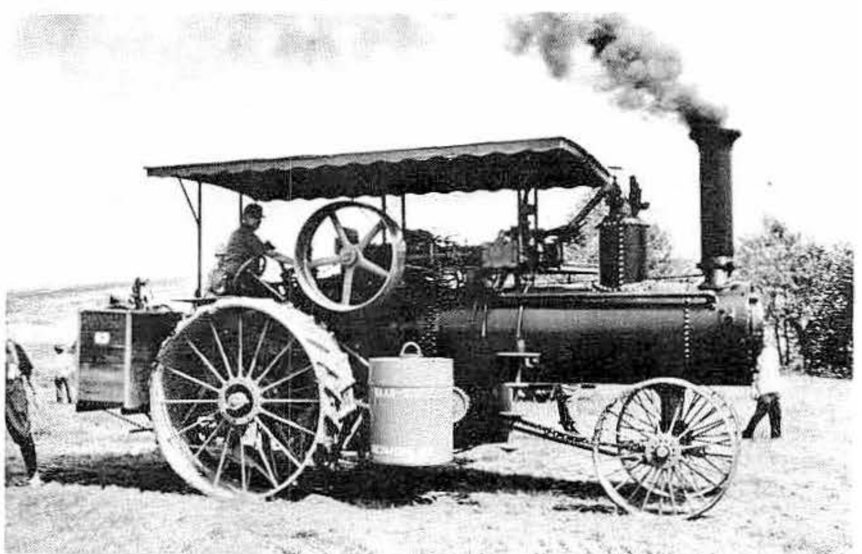


This 1915 model 25 H.P. Gaar-Scott steam traction engine is owned by G. Richey of Norwich, Ohio. It is at the Tuscarwas Valley Pioneer Power Assn. show at Dover, Ohio. The Gaar-Scott Co. made steam traction engines of simple and compound cylinder, plain portable steam engines, the Gaar-Scott 3-Way crank thresher, Field Queen rice thresher, clover hulling outfit, water tanks, plantation circular saw mills, pony circular saw mills and the standard circular saw mill.

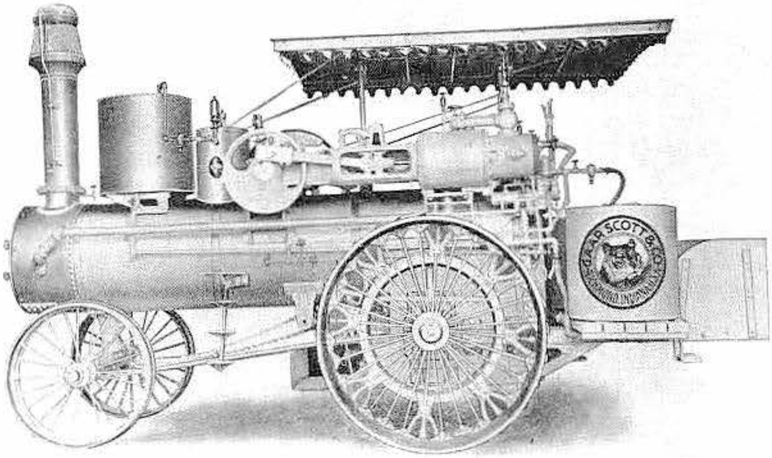


The gear side of the 1906 Gaar-Scott steam traction engine. This engine is a universal straw burner, available in both simple and compound engines. It came in 16, 18, 22 and 25 horsepower.

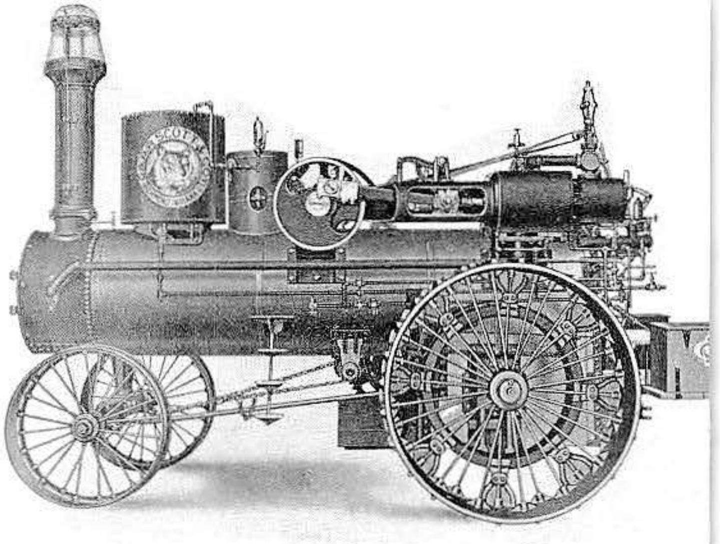
The 25 H.P. Gaar-Scott steam traction engine owned by G. Richey of Norwich, Ohio, is seen here at the Stumptown Steam Threshers Assn., New Athens, Ohio.



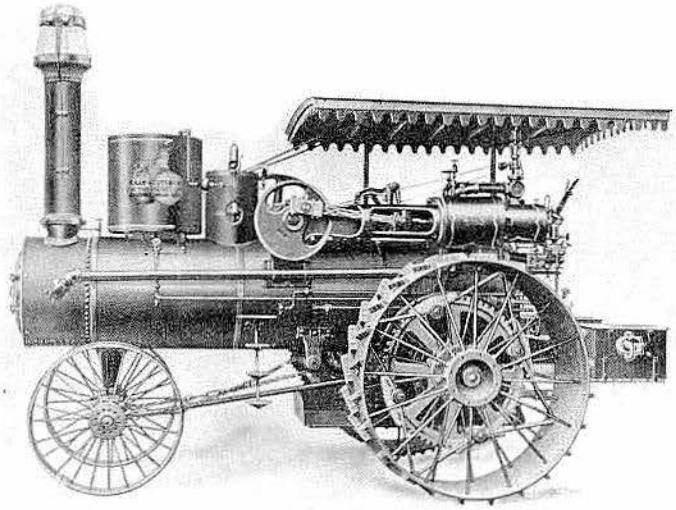
Gaar - Scott Co.



A 30 H.P. Gaar-Scott compound cylinder steam traction engine was pictured in a 1906 Gaar-Scott catalog. This is a plowing engine, with extra heavy plow gear, plow hitch, and a wide platform for carrying two extra water tanks and a large coal bunker. The two extra steel water tanks were each of three barrel capacity.

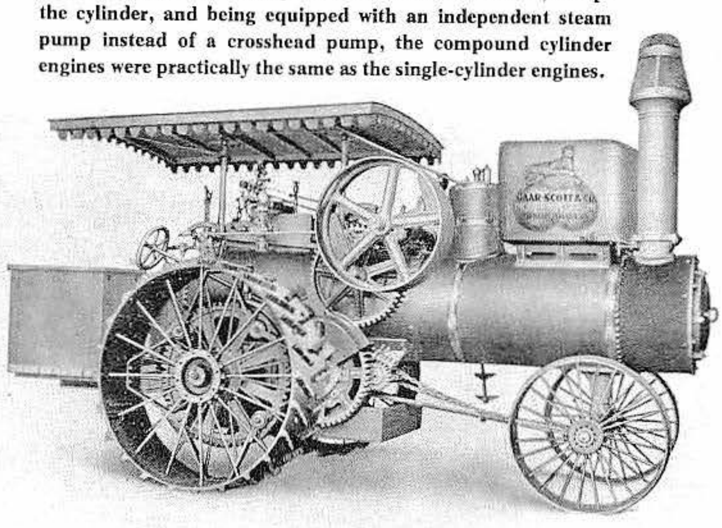


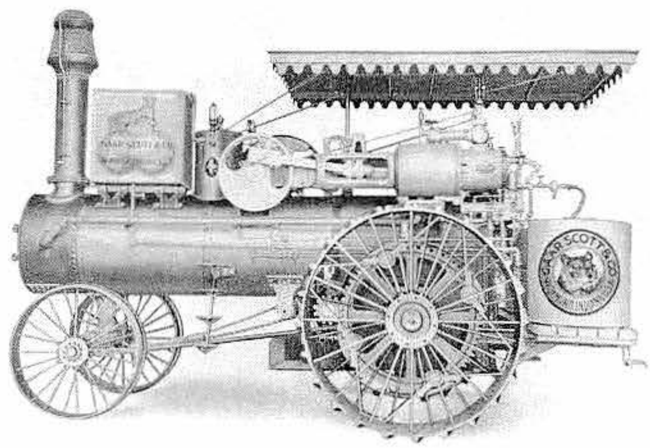
The 1906 straw burning 30 H.P. Gaar-Scott compound cylinder steam traction engine had the small high-pressure cylinder and the large low-pressure cylinder directly and strongly attached to each other by a projection on the small cylinder and a counterbore on the large cylinder, without any open space be tween them. This insured their being always in perfect alignment, and in this position they were bolted rigidly together. If, for any reason, access was desired to the inside of the cylinders, the small cylinder could be easily removed and then replaced in its original position, again in perfect alignment with the large cylinder, and the connection as firm as if both cylinders were cast together. There was only one steam joint between the cylinders, and the cylinders were jacketed. A small steam pipe, with a valve, was put on the boiler for the purpose of carrying the steam directly to the large cylinder, so that in an emergency or hard pull, the engineer could turn on steam and get the full pressure in the large cylinder for a limited time.



The 1908 model 30 H.P. Gaar-Scott compound cylinder steam traction engine has the heavy gear without plowing attachments. The cab shown is the regular style for this engine, at extra cost.

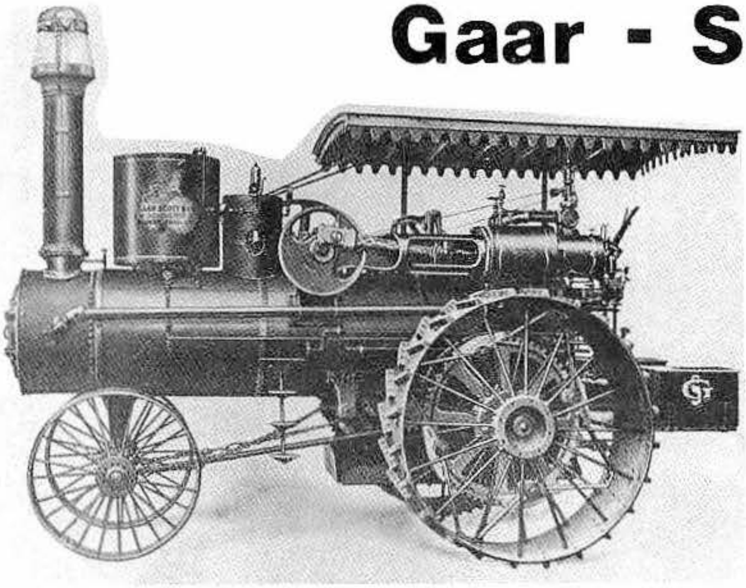
Another view of the 1908 model 30 H.P. Gaar-Scott compound cylinder steam traction engine. In all essential features, except the cylinder, and being equipped with an independent steam pump instead of a crosshead pump, the compound cylinder engines were practically the same as the single-cylinder engines.



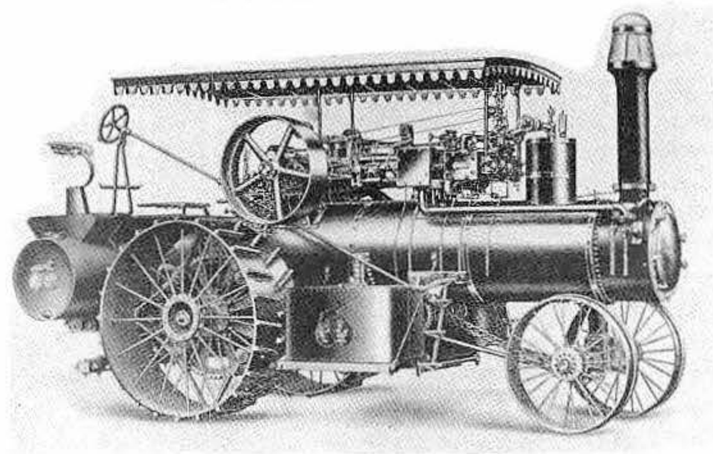


A 30 H.P. Gaar-Scott compound cylinder steam traction engine was pictured in a 1908 Gaar-Scott catalog. This engine used the universal boiler, heavy plow gears, all-steel plow hitch, strong wide platform with large fuel box and round steel tank, and an extra large square steel tank on top of the boiler. Also, it had 16-inch by 76-inch steel drive wheels with eccentric spindles.

Gaar - Scott Co.



The 1910 model 30 H.P. Gaar-Scott compound cylinder steam traction engine had heavy traction gearing and steel drive wheels. The cab shown was the regular style for this engine, at extra cost.



The 1910 model 40 H.P. Gaar-Scott double tandem compound cylinder steam traction engine used the plow hitch beam that was extra strong and convenient for hitching any desired number of plows or other machinery. The Gaar-Scott steam traction engine used black for the boiler dome and smokestack, the ground wheels, fly-wheel, coal and wood bunkers, and the water tank were red, and the roof had some yellow stripping.

Galion Iron Works Co.

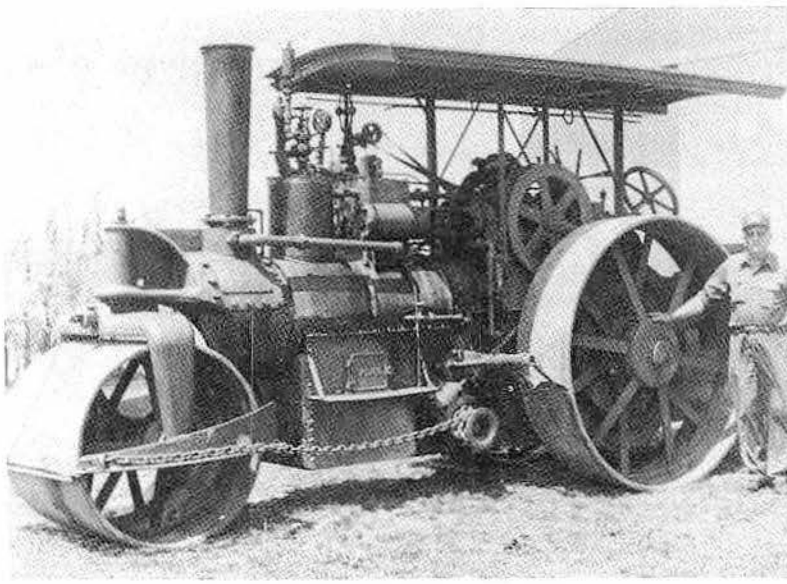
The Galion Iron Works Company was founded in February, 1907 by David C. Boyd, L. M. Liggett, G. L. Stiefel, H. Gottdiener, J. M. Talbott and H. A. Pounder. Mr. Gottdiener served as the company's president for its first 5 years. Its first product was cast iron culvert pipe, which was cast in two halves and designed to be bolted together when put into use.

Product diversification came quickly and the company signature could be seen on road drags, wheel and light scrapers, sprinkling wagons, stone spreaders, portable gravel screening plants, rock crushers, stone unloaders, coal handling equipment, highway sanders, belt conveyors, chip spreaders, and a variety of experimental road machinery.

In 1913 the name was changed to The Galion Iron Works & Mfg. Company. In 1915 Galion produced a new type of grader. The Galion Light Premier — billed as being light enough for 2 horses and strong enough for 4 horses.

An experimental roller built in 1916-17 led to the first production model in March 1921. The first 28 rollers were powered by huge Herr 2-cylinder gasoline engines. But these engines were in turn posessed with the evils of hard starting, as were most of the gasoline engines of the time. So in 1922, Galion introduced its first steam roller, a 3-wheel macadam-type roller. In 1923 very heavy Galion tandem steam rollers (2-rolls) were produced to keep pace with the demand for paved roads. Then in 1924 a return was made back to gasoline engines, using the Fordson Tractor gas engine. In 1925, IHC engines powered the rollers.

In 1929 the company was purchased by the Jeffrey Mfg. Co. of Columbus, Ohio. Today Galion Mfg. is a division of Dresser Industries, Inc., with its home office still at Galion, Ohio.

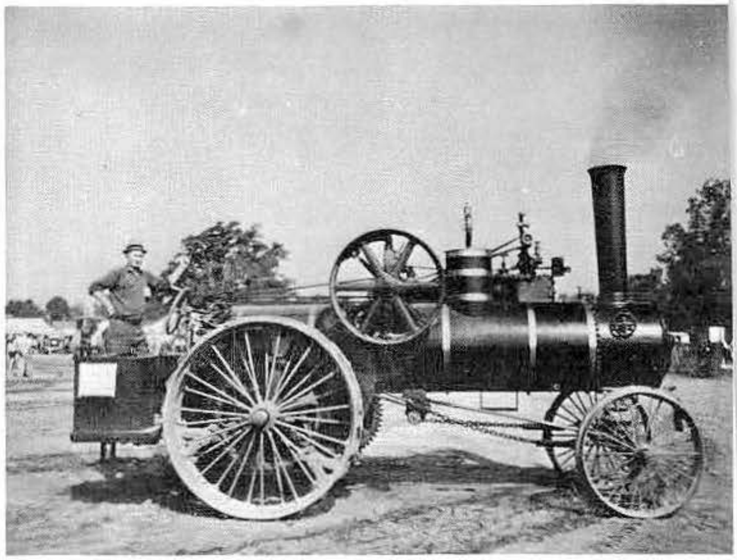


A Galion steam roller built by the Galion Iron Works Co., of Galion, Ohio. Kenneth Mack from Ohio is standing by the roller. At the time this picture was taken he was the owner. The steam roller was built in 1921, had an 18 to 20 HP engine, and when filled with water its weight was 10 tons.

John Goodison

John Goodison, who had been general agent for the bankrupt Sarnia Agricultural Implement Assn. Co., together with G. H. Samis, purchased the interest and factory of the insolvent company. They operated for a year, but under adverse circumstances, and were glad to enter into negotiations with the Sawyer & Massey Co. of Hamilton, Ontario, for the sale of their interests. Operations were continued as usual and John Goodison was retained as manager by the Hamilton firm.

John Goodison was not satisfied with the new arrangement, and late in 1889 acquired sole ownership of the concern. The days of Sawyer & Massey control convinced him of the future of the threshing machine industry, and he wisely abandoned the manufacture of reapers and plows and concentrated on threshing machinery. For a while he called his factory the Tunnel City Thresher Works, but soon changed it to the John Goodison Thresher Co. Meanwhile, the fame of the McCloskey thresher was spreading, and in 1892 Mr. Goodison acquired the right to build these machines. He persuaded John McCloskey to move to Sarnia and work in his factory. The years that followed saw the firm prospering and soon the Goodison "New McCloskey" threshers were favorably known throughout both eastern and western Canada.



Vince Riddell of New Market, Ontario, shows off the fly-wheel side of his 20 H.P. John Goodison steam traction engine built in 1920.

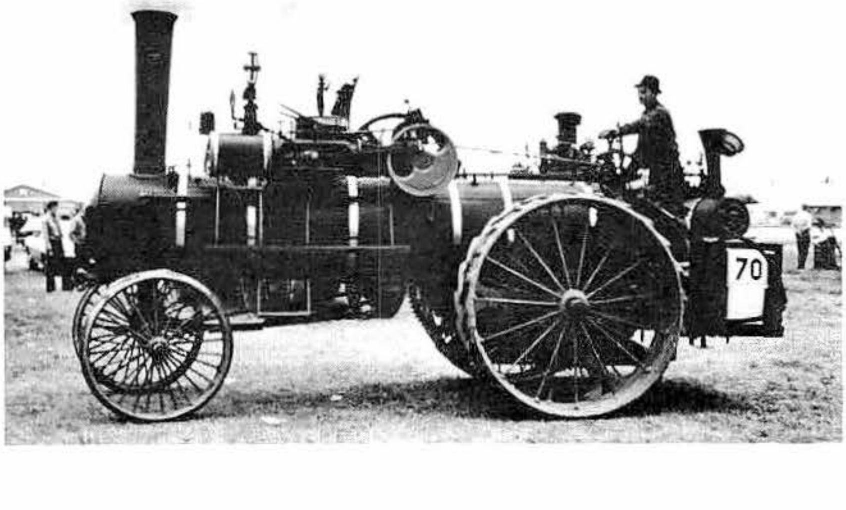
John McCloskey was born in Ireland in 1847. At the age of seventeen he came to Canada along with his parents, three sisters and five brothers. The family located in the bush near the tiny settlement of Oldcastle, about 11 miles from the present city of Windsor, Ontario.

John McCloskey died of pneumonia in 1902 at the age of 55 leaving behind in his workshop several uncompleted models of inventions he had been working on. John Goodison died in 1915. The firm, now known as Goodison Industries Limited, is still headed by the third generation of the Goodison family.

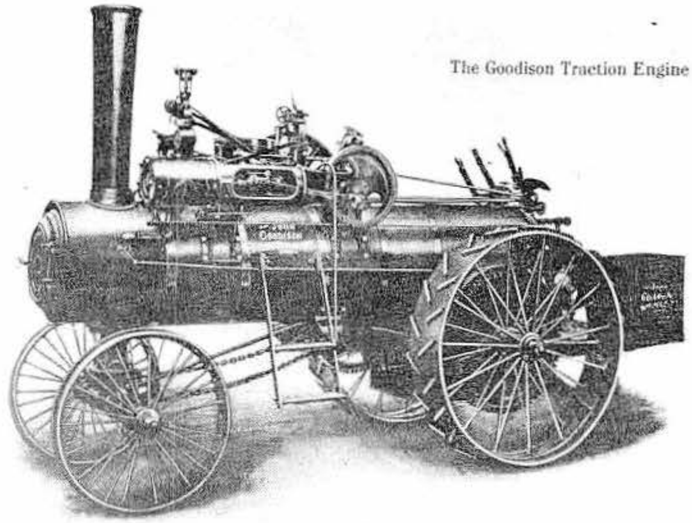
In 1902 it began to build a few portable engines, and two years later entered the traction engine field. Only single cylinder, side mounted engines were built and the original design was never changed.

In 1920 Goodisons began selling Hart-Parr gas tractors and after the big merger of 1928 became Canadian distributor of Oliver tractors and equipment. Thus, another well known make of threshing machinery passed into history.

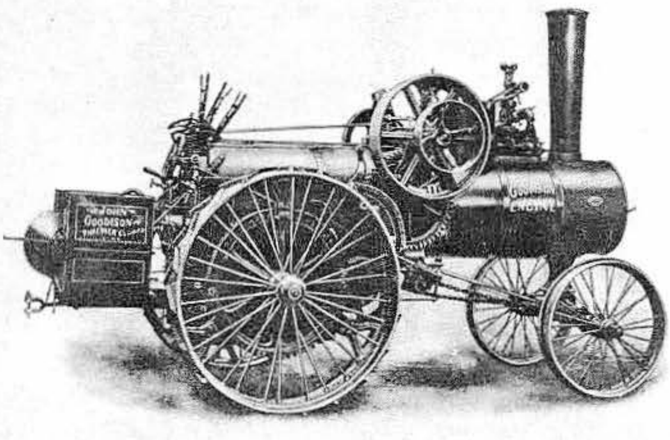
A 20 H.P. John Goodison steam traction engine, built by John Goodison Thresher Co. of Sarnia, Ontario, in 1920. This engine is owned by Vince Riddell of New Market, Ontario, and is here chugging around at the Ontario Steam & Antique Preservers show. In 1902, John Goodison Thresher Co. began to build a few portable engines, and two years later entered the traction engine field. Only single cylinder, side mounted engines were built, and the original design was never changed.



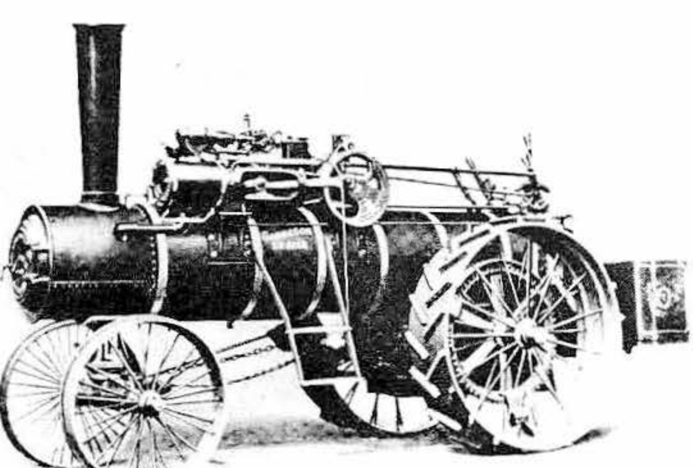
John Goodison



A built-in ladder provided easy access to the cylinder of the 1909 model 20 H.P. John Goodison steam traction engine. The flues of this engine used special high-grade quality charcoal-iron tubes. The material had a smooth surface, to which scale did not readily adhere. The manner of arranging the tubes allowed free circulation of water, and the number and dimensions gave a heating surface that ensured easy steaming. The flue sheets were cut to fit the flues, making absolutely steam-tight joints, so that brass ferrules and other contrivances were unnecessary.



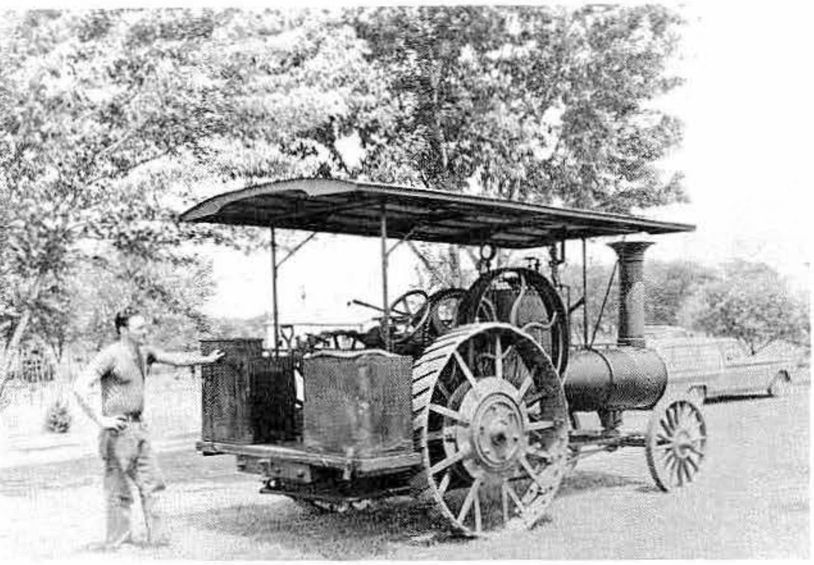
This is the 1909 version of the 20 H.P. John Goodison steam traction engine. This engine's boiler was a locomotive type, of heavy steel plate, stayed throughout. The boilers were designed so that they would withstand all the severe strains incident to the work of a traction engine. The boilers were made of the very best open hearth homogeneous steel of 60,000 pounds tensile strength.



The 22 H.P. John Goodison steam traction engine, built in 1922, continued to sport a built-in ladder for easy access to the cylinder. This was one of the last engines built by this company.

This 20 H.P. John Goodison steam traction engine, built in 1922, is owned by Donald Snell of Ontario, Canada. It is at the Ontario Steam & Antique Preservers show. In 1920 John Goodison began selling Hart-Parr gas tractors, and after the big merger of 1928, became Canadian distributor of Oliver tractors and equipment. Thus, another well known make of threshing machinery passed into history.

Greencastle



This 12 H.P. Greencastle steam traction engine, built by Crowell Mfg. Co. of Greencastle, Pa. in 1885, is owned by William U. Waters Jr. of Damascus, Md. This engine is believed to be the only Greencastle left today. The engine has an 8 x 10½-inch cylinder and a non-variable cutoff. The Crowell Co. was founded sometime in the 1800s by a Mr. Crowell, who was joined by a Henry B. Larzelere, either as a partner or as machinist and designer.

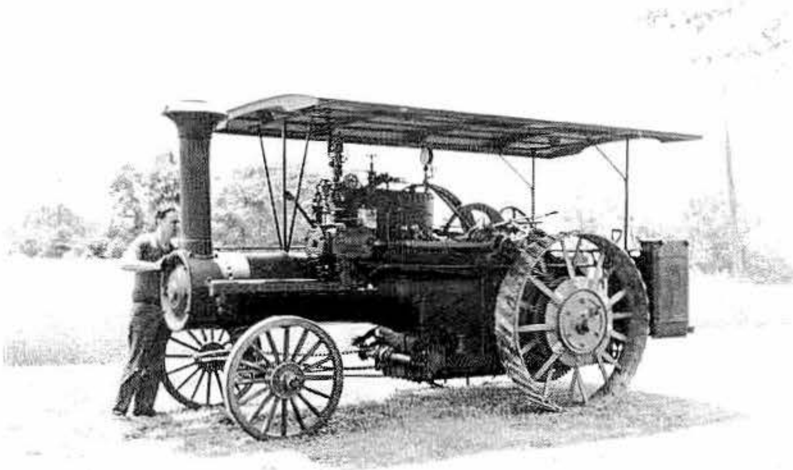
The Greencastle line of machinery was built by the Crowel Manufacturing Company of Greencastle, Penn., located about 8 miles from Waynesboro, the home of Frick and Geiser. The company was founded sometime in the 1800s by a Mr. Crowell, who was joined by Henry B. Larzelere, either as a partner or as machinist and designer.

It is impossible to determine how many Greencastle engines were built. The Greencastle Chamber of Commerce thought only a couple were built along with 13 threshers. Twelve of the threshers were returned to the factory because of imperfections with only one being paid for. This one was burned in a barn fire and the insurance paid for it.

It appears that there were about 12 traction engines built judging from old timers who remember hearing of such engines. The Crowell Mfg. Co., also built the Greencastle grain drill which was their specialty.

Farm Implement News Buyers Guide of 1890 lists the company as building threshers, portable sawmills and portable engines. The Crowell Co. went into receivership in the late 1890s under the reign of a Rahauser family. The Geiser Mfg. Co. of Waynesboro bought the plant about 1901, using it to build gas engines, tractors etc. The buildings are still standing, with "Emerson-Brantingham of Rockford, Ill.," painted on the west side of the main building. E-B gained control of the Geiser Co. about 1913.

Mr. Larzelere was a mechanical engineer born in Willow Grove, Penn. He moved to Greencastle in 1882, probably from Doylestown, Penn. In about 1887 he moved to Muncy, Penn., and with the help of a Mr. Brocious started the Muncy Traction Engine Company. The Muncy Co. was apparently unsuccessful. Mr. Larzelere spent his later years with the A. B. Farquhar Co. of York, Pa., selling and installing sawmill outfits.



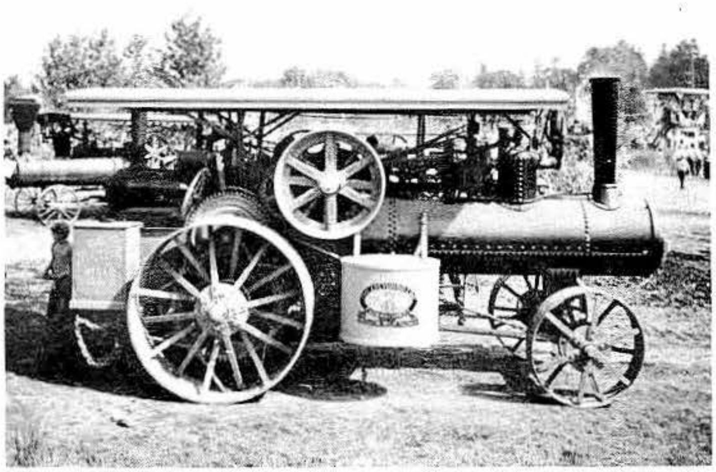
William Waters inspects the smokestack of his 12 H.P. Greencastle steam traction engine, built in 1885. The Crowell Co. went into receivership in the late 1890s under the reign of a Rahauser family. The Geiser Mfg. Co. of Waynesboro, Pa., bought the plant about 1901, using it to build gas engines and tractors. The buildings are still standing, and Emerson-Brantingham of Rockford, Ill., is painted on the west side of the main building. That company gained control of the Geiser Co. about 1913.

Greyhound (Banting Mfg. Co.)

To know when and where to use his ability and just what op- ›rtunities to embrace is often the salient feature that carries the ıccessful man beyond his fellows and enables him to become a ›wer in his chosen field. John William Banting, who possessed ıis quality in a notable degree, was specializing in the manu- ıcture of farm machinery. The importance and scope of his in- ·rests had not only placed him in a position of leadership in in- ustrial circles of Toledo, Ohio, but had also made his name well nown to agriculturists in many parts of the world. He was born ı Ottawa county, Ohio, August 6, 1858.

His parents were Carlos Cornelius and Eva (Stadler) Banting, ıe former a native of the north of Ireland and the latter of aden, Germany. In 1854 they came to Ohio and the father evoted his attention to farming, continuing to cultivate and im- rove his land until his demise, which occurred at Elmore, Ohio, ı 1881. He was an honored veteran of the Civil War, joining the 'hird Ohio Cavalry, and he remained in the service during the ntire period of hostilities. The mother passed away March 12, 908. In their family were four children: Carlos C., an executive fficer of the Banting Manufacturing and Banting Machine com- ›anies; Emma V. and Lucy, who lived in Elmore, Ohio; and John V., who was the eldest in the family.

John William Banting acquired his education in the country chools of Ottawa county, Ohio, and he obtained his experience n business through selling farm machinery direct to the agri- ulturists of Ottawa county. In 1882, when 24 years of age, he ›pened a store at Elmore, Ohio, for the sale of hardware and farm mplements. This constituted the nucleus of the large business of vhich he would become the head. He continued to operate his in- erests at Elmore until 1900, when he sold out and on the 1st of 'anuary, 1901, moved to Toledo, Ohio.



This attractive 18 H.P. Greyhound steam traction engine, built in 1917 by Banting Mfg. Co. of Toledo, Ohio, is owned by Reuben Miller of Thomasville, Pa. It is steaming quietly at the Rough & Tumble Engineers Historical Assn. show at Kinzer, Pa. In January, 1915, the Banting Mfg. Co. was organized, with John William Banting as president.

He had organized the Banting Machine Co. in the fall of the previous year, but the business did not get under way until January 1, 1901. On the 1st of January, 1915, the Banting Manufacturing Co. was organized and Mr. Banting was president of both concerns, of which his brother, Carlos C. Banting, was secretary, while J. F. Sanders was vice president. They made the famous Greyhound type of farm machinery, which they sold direct to farmers, and their implements were used extensively by agriculturists in the United States and Canada, with a particularly large demand in the grain-growing districts. They manufacture threshers for grain and beans, hay presses, steam traction engines and other farm machinery and their plant was only one of the kind in Toledo, Ohio. They maintain a selling agency in South America and they established a branch in South Africa, their ramifying trade interests extending to many parts of the world.

Mr. Banting combined keen sagacity and breadth of vision with superior executive ability and had the power of concentration which enabled him to give all of his thought to the matter in hand. He thus brought to bear all of his forces upon the accomplishment of his purpose. His labors had been manifestly resultanted and an extensive productive industry resulted as a monument to his initiative spirit and powers of organization.

Mr. Banting, also was a nationally known figure also in the automobile business, written about often in virtually every early motor magazine in America. He entered the automobile business in 1908 with the Deal Buggy Co. which he represented. He started building the Deal 2-cylinder, air-cooled delivery car which had much the appearance of a horse-drawn vehicle.

In 1909 he took the agency for the Carter Car, a friction drive model built in Pontiac, Mich., and presented it that year in Toledo's first automobile show which contained 11 exhibits and which he helped to organize.

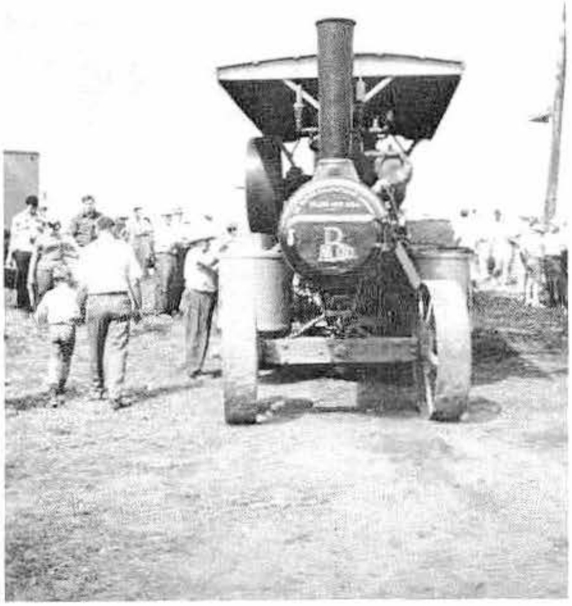
In 1911 Mr. Banting took the distributorship of the Patterson automobile in Ohio. Later he became distributor of the Chandler, then the Durant, and in 1930 was appointed distributor of Dodge, Plymouth and Dodge trucks. He represented these until his death, operating under the corporate name of the Banting Motor Car Co., at Detroit Ave. and Collingwood Blvd. in Toledo. Previous sales rooms were at Jefferson Ave. and Michigan St., and at Madison Ave. at Eleventh St., Toledo.

Mr. Banting was one of the founders of the Toledo Automobile Shows Co., a non-profit organization holding annual motor expositions and was treasurer of it many years. Later he, with others, formed the Toledo Automobile Trades Assn. in which he held all offices.

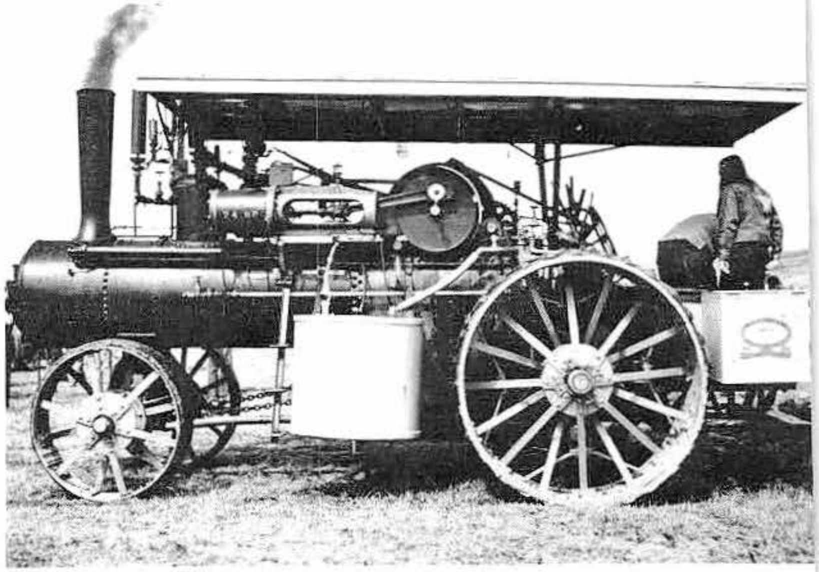
Mr. Banting for many years was interested in the Elmore Oil & Gas Co., operator of oil wells and leases in the vicinity of Elmore, Ohio.

Carlos C. Banting, John's brother became the president of the Banting Co., farm equipment firm. In 1930 the Banting Manufacturing Co. ceased its manufacturing operations and Carlos C. Banting formed the Banting Co., to sell farm equipment.

Greyhound (Banting Mfg. Co.)

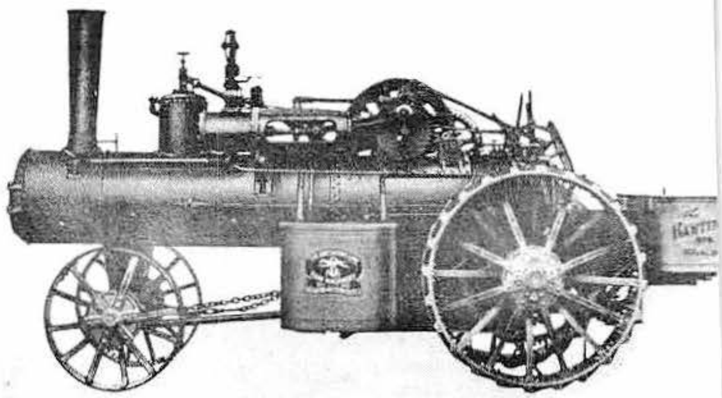


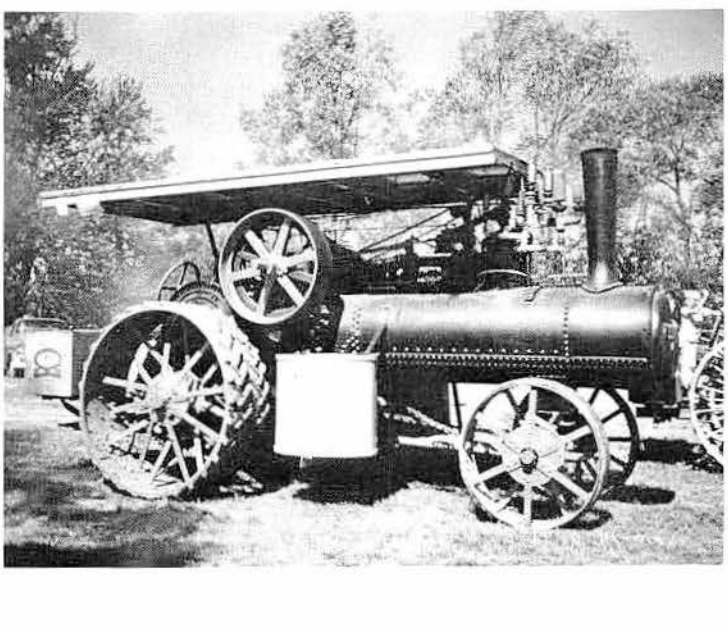
Here is a head-on view of the 18 H.P. Greyhound steam traction engine owned by Reuben Miller of Thomasville, Pa.



This is the cylinder side of the 24 H.P. Greyhound steam traction engine owned by Wm. & Ed Flowers of Adena, Ohio. The side mounted water tanks were standard equipment on Greyhounds.

The Greyhound steam traction engine came in two sizes: with a $8\frac{3}{4}$ x 11-inch cylinder or a $9\frac{3}{4}$ x 11-inch cylinder. The $8\frac{3}{4}$ x 11-inch cylinder engine weighed 19,500 lbs., while the $9\frac{3}{4}$ x 11-inch was 22,500 lbs. net. J. W. Banting was also a known figure in the automobile business.





Sporting a canopy top and a multitude of whistles is this 24 H.P. Greyhound steam traction engine built in 1922. This engine is owned by Wm. & Ed Flowers of Adena, Ohio, and appears at the Stumptown Steam Threshers Assn. show at New Athens, Ohio. J. W. Banting for many years was interested in the Elmore Oil & Gas Co., operator of oil wells and leases in the vicinity of Elmore, Ohio.

Groton Mfg. Co.

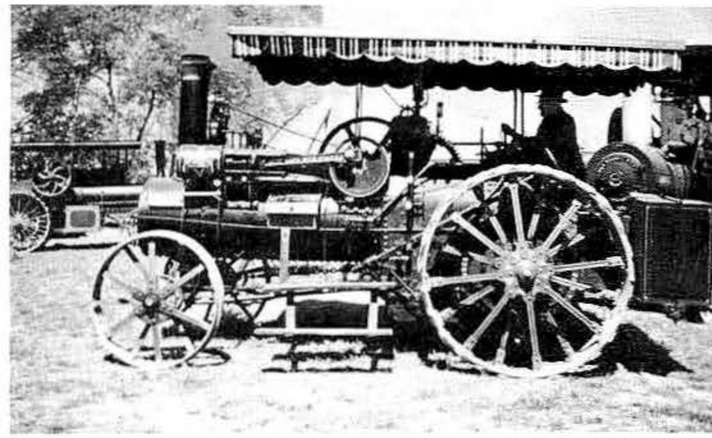
Charles Perrigo was born at Canajoharie, N.Y., September 22, 317, the son of Martin B. Perrigo, a tanner, currier and shoe- aker. At the age of 19, Charles was apprenticed to a foundry at enoa, where he worked four years. Afterwards he worked at kaneateles and Geneva, N.Y. In 1849 he went to Groton, N.Y., id started a foundry, now a part of the Bridge Company's exten- ve works.

Lyman Perrigo went to Groton and started in business with his rother Charles in 1849. They manufactured agricultural ma- iinery, the firm name being C. & L. Perrigo. Lyman was an in- ntor of a spoke planer, and a first-class machinist. He was an ganizer of the bank and a stockholder in the Southern Central ailroad.

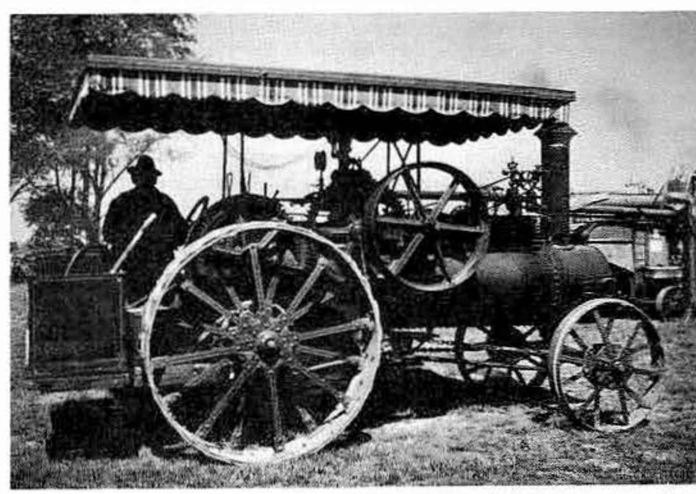
William Perrigo went to Groton about 1859, and became a part- er with S. Spencer in the manufacturing of threshing machines. e bought Mr. Spencer out and, about 1863, formed a partner- ip with Fredrick Avery. This firm, with Charles Perrigo & Com- any formed the Groton Manufacturing Co.

The Groton steam traction engine had a large boiler of the fire ox, wagon top pattern with dumping grates. The fire box part of oiler extended some six inches above the fore part of the boiler id had an extra large dome directly over the fire. The steam was ways dry and perfectly separated from the water and was irried along inside of the boiler to the smoke box. It was heated gain before it reached the steam chest, where it went through a ide valve into the cylinder, and after using went directly into the noke stack and left little or no back pressure. The engine had an ktra long arm and perfectly balanced crank, ball governors and osolute reverse. The steam traction engine had large drive heels with a steel face 12 inches wide and lugs bolted to face, flat eel spokes that could be removed easily and repaired, a four inch kle which passed back of the fire box across the boiler and re- olved with the wheels, resulting in no binding of gears, which ere heavy and large. The clutch was in the fly wheel. The boiler as fed by a Penberthy injector, which was always ready, making o use for a steam pump.

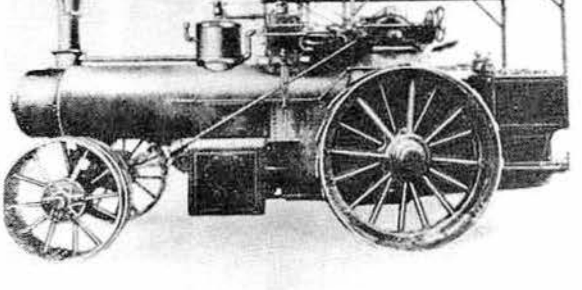
The Groton Manufacturing Co. made the Groton steam trac- on engines, and the "Monarch" steam road rollers.



This 10 H.P. Groton steam traction engine was built by Charles Perrigo & Co. of Groton, N.Y. in 1891. It is owned by Harry Rogers of Kensington, Ohio, and is participating at the Stumptown Steam Threshers Assn. show at New Athens, Ohio. William Perrigo went to Groton about 1859, and became a partner with S. Spencer in the manufacturing of threshing machines. He bought Spencer out and, about 1863, formed a partnership with Fredrick Avery. This firm, Charles Perrigo & Co., later formed the Groton Mfg. Co.

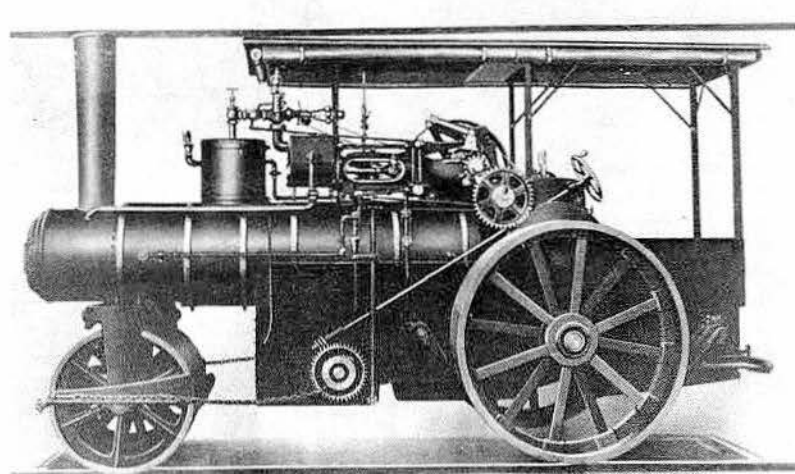


This is the fly-wheel side of the 10 H.P. Groton steam traction engine owned by Harry Rogers of Kensington, Ohio. The fancy canopy trim is not original.

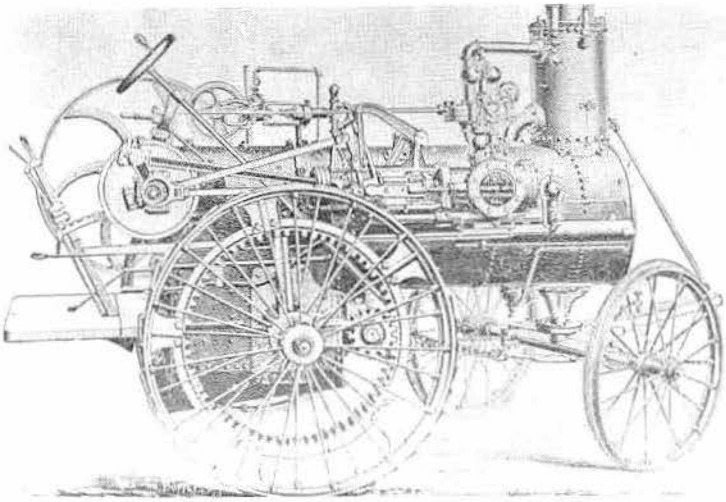


This 30 H.P. American Monarch steam traction engine was built by American Road Machinery Co. of Groton, N.Y. The engine was quite similar in design to the Monarch road roller, but was fitted with road wheels instead of rollers. It is probable that this engine was designed to be more of a road locomotive for the construction industry than an agricultural traction engine.

The American Monarch steam road roller was built by American Road Machinery Co. of Groton, N.Y. This steam roller used a heavy, well proportioned boiler, front rolls, high steam dome and gears. American Road Machinery Co. was connected to the Groton Mfg. Co. and the Charles Perrigo Co.



Harrison Machine Works



Appearing to be extremely complicated, this 10 H.P. Harrison steam traction engine was built by Harrison Machine Works of Belleville, Ill. in 1882. An example of this engine, bearing production # 714 was restored in 1961. For 35 years it was buried in the shifting sands of the Missouri River, on Howell Island, near St. Charles, Mo. The smokestack passes through the steam-dome. This super-heating steam-dome greatly relieves the tendency to foam and makes dry steam. The dry steam is taken out at the top of the dome, 30 inches above the water line, with short pipe connections. This engine has the Stephenson Link Valve Motion. Harrison used this link valve motion until 1884-5. The stub tongue on the front axle, to attach horses when desired, was used on all engines produced by the Harrison Machine Works till the end of production. All of the early engines were equipped with double-trees, neck-yoke and a front seat for the driver. The engine has a 6½-inch cylinder and a 13-inch stroke. The fly-wheel is 44 inches in diameter. The rear wheels are 4-foot 10-inches in diameter. In 1884-5, when the engines were called "Jumbos," the diameter of the rear wheels was increased to 6-foot 6-inches. There are 26 2½-inch flues, 70 inches long. Restoration work was done by Fred Kommer and Martin Rosenaeur of St. Louis, and by the owner Louis Kunz of Fenton, Mo.

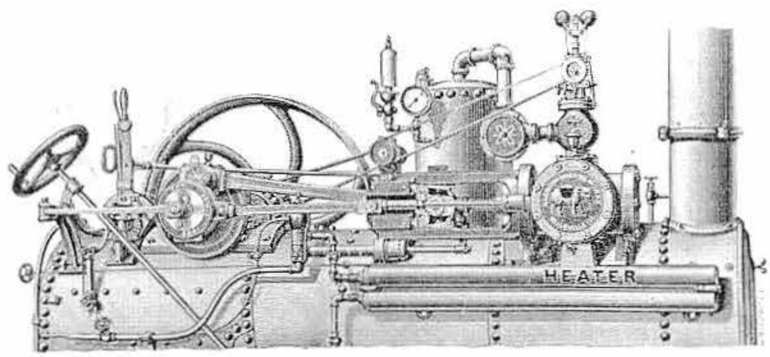
Harrison Jumbo steam traction engines were built by Harriso Machine Works of Belleville, Ill., a company established in 184 and incorporated in 1878. This company made 839 steam tractio engines.

The Harrison Jumbo was a single cylinder, side mountec steam traction engine, close coupled so that it could be turned i a very small circle. The weight was evenly distributed on th wheels, reducing the tendency to rare up. The boiler was ver large for the horse-power rating, and of the low pressure open fir box type. In spite of the large size, the fire box, flue area an water capacity were so proportioned that the boiler was highly ef ficient. It was a ready steamer, easy to fire, with economical con sumption of water and fuel.

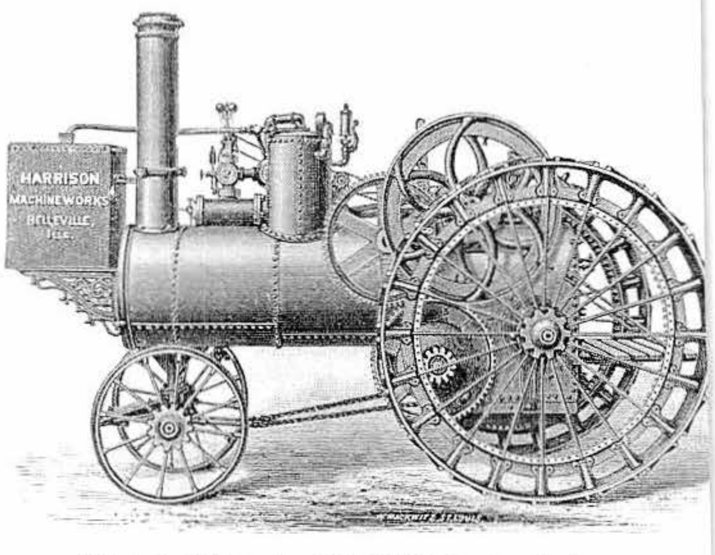
The Jumbo was desirable for road travel because of its tw speeds. The high gear, for traveling over the road, had a spee range from four to five miles per hour. For heavy pulls, a low gea was practically unlimited, with a top speed of 2½ miles per hour The two speed arrangement was simple, sturdy, and easy to ma nipulate.

The Jumbo boiler was built from the best flange and fire bo that could be procured. According to a company publication "Each sheet is stamped with its tensible strength, which range from 55,000 to 65,000 pounds per square inch."

The Harrison Machine Works made the following: the Jumb steam traction engines; the Jumbo portable engines; the Bellevill separator; the Great Western separator; Belleville separato geared for horse-power; Weighers, Baggers, and Wagon-loaders and the well known Dingee-Woodbury horse power.

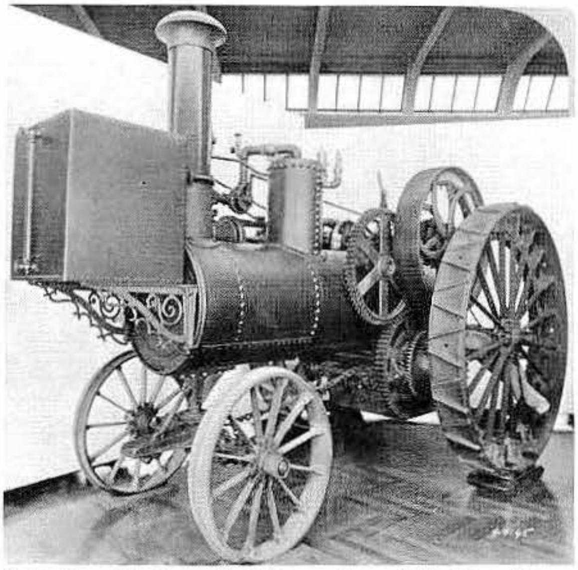


Here is a good close-up showing the cylinder, guides, Gardner governor, steam gauge, throttle valve, reverse lever, steering wheel, heater and other parts. The engineer had but two levers to handle, while most engines had three. The right hand did the steering and the left hand operated both the throttle and reverse. This is the 16 H.P. engine of 1902. Harrison used an elephant as its trademark for the "Jumbo" series—referring, of course, to P. T. Barnum's famous trained circus elephant.

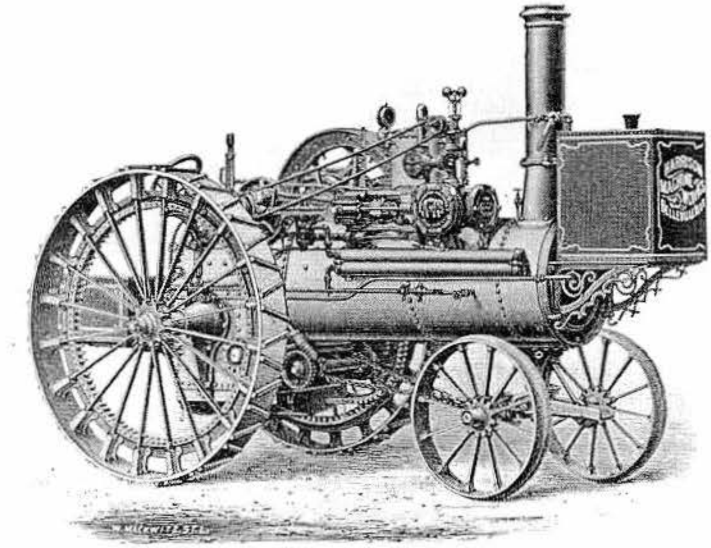


This is the 1902 version of the 16 H.P. Harrison Jumbo steam traction engine. The boiler was made of 5/16-inch steel plate, of 60,000 lbs. tensile strength, large in proportion to the horse-power rating, which gave ample steaming capacity. The crown sheet was made sloping, thus insuring its being protected by water when going down steep grades. The average space above the crown sheet was 12 inches and was in the form of an arch, which gave it additional strength. The dome was very large in size, being 24 inches high and 16 inches in diameter, centrally located on the boiler. The flues were of the best lapwelded iron, were 2½ inces in diameter, and were thoroughly expanded and beaded.

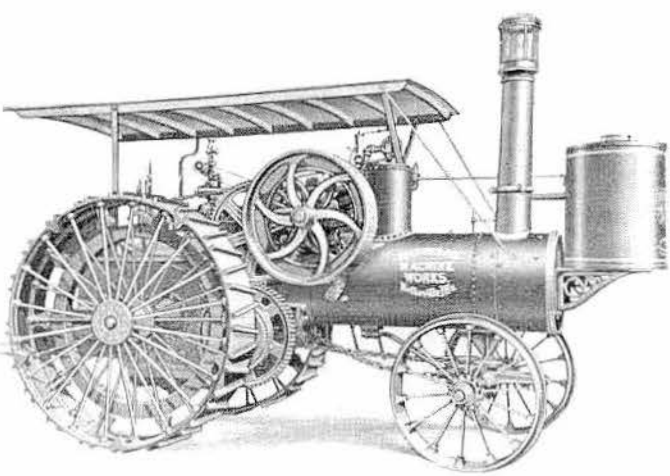
Harrison Machine Works



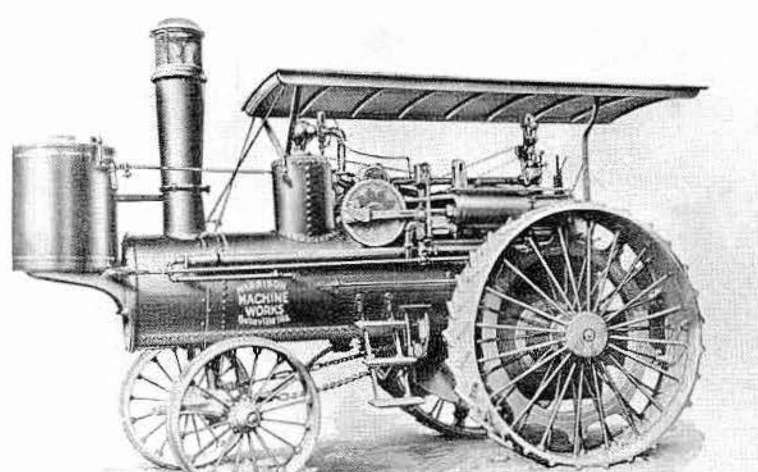
On display at the Henry Ford Musem, Greenfield Village, Dearborn, Mich., is this 12 H.P. Harrison Jumbo steam traction engine, built in 1895. This is a reversible engine with two speeds. The valve eccentric was shifted by sliding the shaft on which the eccentric was mounted. These engines used huge front-mounted water tanks, which must have made steering a bit less than a pleasure. An interesting note on this engine is the trunk of a tree firmly embedded in the spokes of the rear wheel. When this engine was discovered, the tree was growing through the wheel, and the trunk had to be sectioned off in order to move the engine. During restoration, it was decided to leave the remainder of the trunk in the wheel.



This is the cylinder or engine side of the 16 H.P. Harrison Jumbo steam traction engine of 1902. The engine was equipped with a safety fusible plug in the crown sheet, a steam-dome on the boiler; a flue protecting plate; water tank on the front of the boiler, steam jet pump and hose for filling same; Gardner governor with Sawyer's valve; steam gauge; pop safety valve; heater; reverse gear; steam whistle; throttle valve; packing rings (either steam or spring); injector; cross-head pump; funnel and flue brush; fire hook and scraper; combination pipe wrench; hose; socket and spanner wrenches; extra glass water gauges; steam and water gauges; gauge cocks; oil can; steam blower; sight feed lubricator and tool box on the platform. Also furnished on special order was a cab over the engine and a solid platform and shield over the drive wheel. These cost an extra $25.

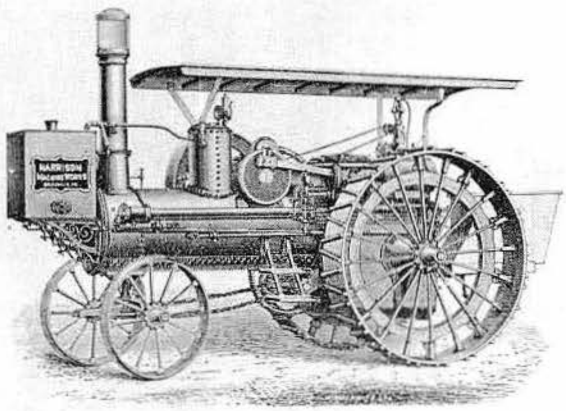


A 17 H.P. Harrison Jumbo steam traction engine. This engine's fire-box was of the open bottom type. The inner and outer shells were riveted to a heavy cast mud ring. The fire-box and accompanying grate surface were large, but were in proportion to the other dimensions of the boiler. Plain grates or rocker grates could be furnished, either of which were of a substantial design. All sheets comprising the inside of the fire-box were of a special fire-box steel, which was made to withstand the intense heat to which these parts were subjected. The flue sheet was ½-inch thick, with drilled flue holes. This presented a smooth bearing, which with the copper ferrules, made a steam tight joint that could be kept without trouble.

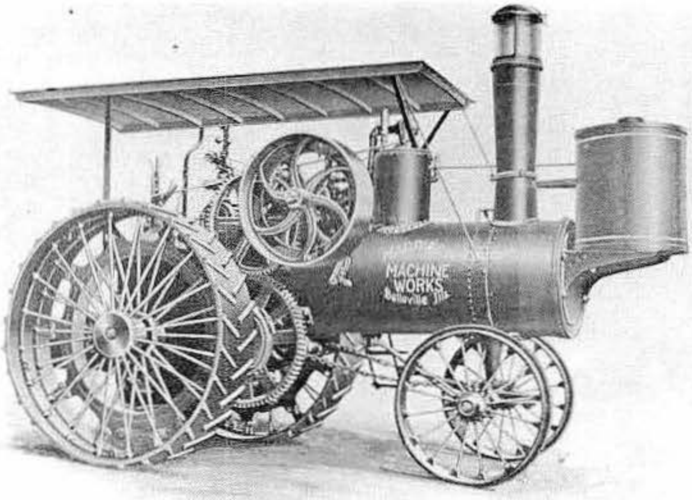


The 20 H.P. Harrison Jumbo steam traction engine was provided with an injector, ejector and cross-head pump, so arranged that feed water could be drawn from a barrel on the ground, from the head tank into the boiler, or from the water wagon into the head tank. All bearings subject to wear were so arranged that they could be adjusted and kept tight. Convenient oil cellars, grease cups and automatic oilers were located where necessary. The Jumbo was built for hard service and long life. This unit was rated at 65 brake H.P.

Harrison Machine Works



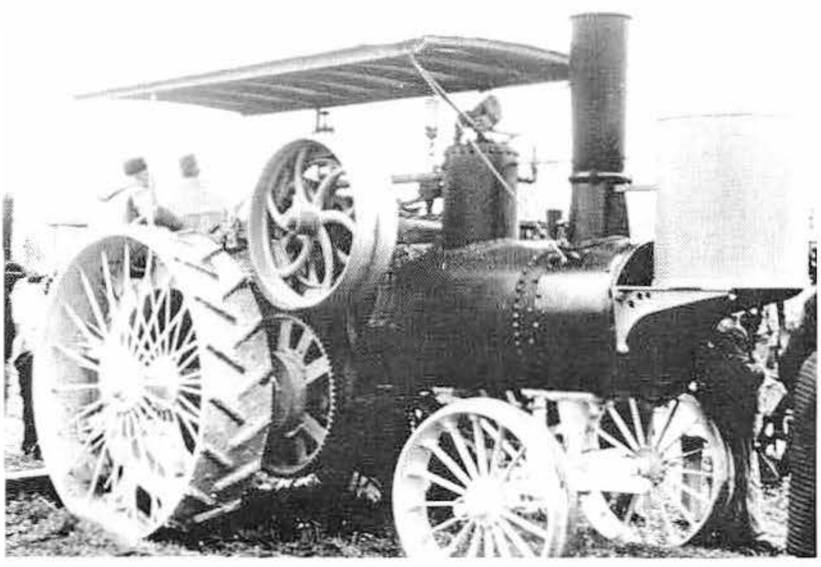
Shown with its canopy cab is the 16 H.P. Harrison Jumbo steam traction engine. The Harrison Machine Works of Belleville, Ill., was established in 1884 and incorporated in 1878. This company made about 839 steam traction engines, including the Jumbo steam traction engine, the Jumbo portable engines, the Belleville separator, the Great Western separator, Belleville separator geared for horsepower, weightiers, baggers, and wagon-loaders.

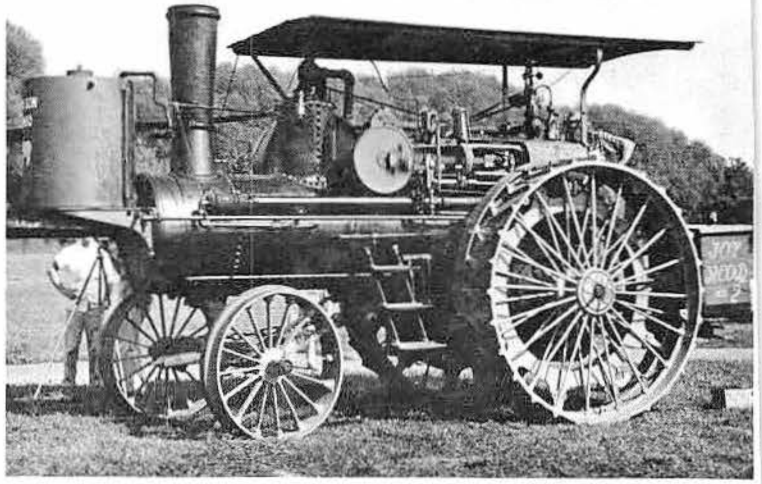


This is the flywheel side of the 20 H.P. Harrison Jumbo steam traction engine. This engine's smoke box, instead of being formed in one piece with the shell, was rolled independently and attached with butt straps. The smoke box was long, and acted as an effective spark arrester. Due to its construction, it could be detached for replacement. This was especially desirable, because the bottom of the smoke box usually received little attention and was subject to strong corrosive action.

This 20 H.P. Harrison Jumbo steam traction engine, built in 1914, is owned by Neil McClure of Colchester, Ill. It is on display at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa. Neil McClure acquired this Harrison Jumbo in 1952. He found it at the southern tip of Illinois near the Ohio River, where it had operated a sawmill. After securing the engine, Neil McClure used it on his farm before taking it to Mount Pleasant. This engine is a single cylinder, side-mounted, close coupled so that it could be turned in a very small circle. The weight was evenly distributed on the wheels, reducing the tendency to rare up.

This 20 H.P. Harrison Jumbo steam traction engine, built in 1931, was owned by Earl Marhanka of Dowagiac, Mich. This engine is a single cylinder side reverse mount. Its engine is # 2341. This engine sold for $6,700 in May, 1973.





This 20 H.P. Harrison Jumbo steam traction engine, built in 1912, is owned by Wilford Bunyea of Plymouth, Mich. The Jumbo boiler was built from the best flange and fire-box steel that could be procured. Each sheet was stamped with its tensible strength, which ranged from 55,000 to 65,000 pounds per square inch.

Heilman Machine Works

William Heilman was born in Bermersheim, Hesse-Darmstadt, Germany, on October 11, 1824. His father, Valentine Heilman, was a farmer. He died in 1826. The widowed mother married Peter Weintz. William labored on the farm and also attended the school of his native village.

In 1843 the family emigrated to the New World and landed first at New Orleans. Then they went up the river to St. Louis, and soon after located in Posey county, Indiana, where Mr. Weintz pursued the occupation of a farmer.

Here young William labored, but the business was distasteful to him. Four years afterward, in 1847, he engaged in the foundry business in Evansville with his brother-in-law, Christian Kratz.

Their small machine shop on Pine St. was at first run by two blind horses. Three years later their log shop was displaced by a brick one, and the horses relieved by steam power. Their first work was dog-irons, cast plows, and stoves.

In 1854 they constructed their first portable engine, and in 1859 their first thresher. The emergencies of rebellion greatly enhanced their business, and they could scarcely fill their orders, notwithstanding the enlarged capacity of their works. When Kratz retired in 1864, he received $100,000 for his interest in the concern. Then, through Heilman's untiring energy, the field of trade was enlarged, the City Foundry enlarged so as to cover almost an entire block, and the business made to prosper almost like magic.

After 1859 the company manufactured the Heilman steam traction engines and threshers.

The Heilman steam traction engine boiler was made of Flange steel throughout (any plate could be bent back cold without fracture) of full rated horse power, with water-bottom fire box having hand holes at the lower corners for easy cleaning, and one over the fire door for filling the boiler. The engine was a rigid bored, girder bed type with adjustable shoe, large crosshead, heavy forged connecting rod and branches and wrists of ample dimensions. The gearing was heavy and durable, being of steel alloy and the differential pinions were steel of best quality.

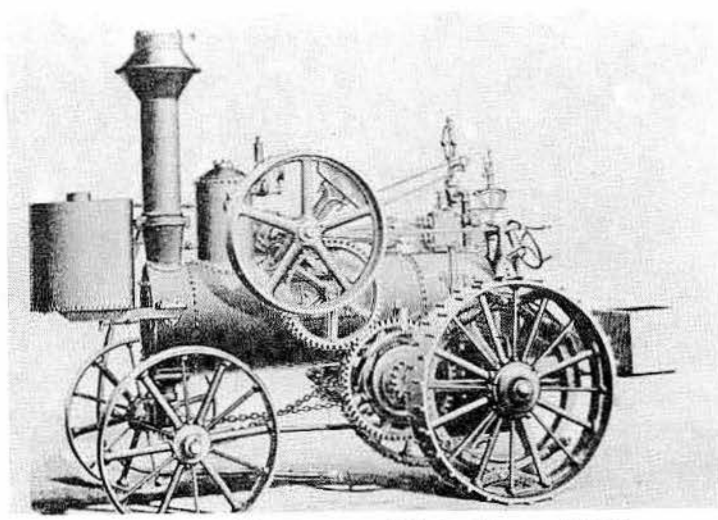
The cast iron smoke stack was of neat design and would outlast many sheet steel ones. The steering wheel and drive pulley were both on the right side for ease in lining up for the belt. The engine platform was all steel frame with a wood top; very rigid and arranged for attaching the patented adjustable plow and grader hitch with pull low, giving great tractive power to the engine. The friction clutch had a large friction surface and gave full power to the drivers. It could be engaged and released with ease.

The Heilman cross shaft shift reverse was used, having demonstrated its dependability through twenty years of service on engines.

Usual furnishings that came with the steam traction engines included two round steel water tanks and tool box on the platform; force feed oil pump; all oil cups; centrifugal oiler for wrist; governor; governor belt; cross-head pump and injector with 8⅓ feet of 1-inch suction hose; one jet with 12½ feet of 1-inch suction hose with strainer; steam and water gauges; gauge cocks; pop safety valve; blow-off valve; surface valve and whistle; poker; scraper; flue brush; funnel to fill boiler; oil can, and wrenches as follows; one combination, one socket, one alligator-elgin, one forged S. or one forged spanner wrench for bolts and piston gland, cold chisel, hemp and gum packing.

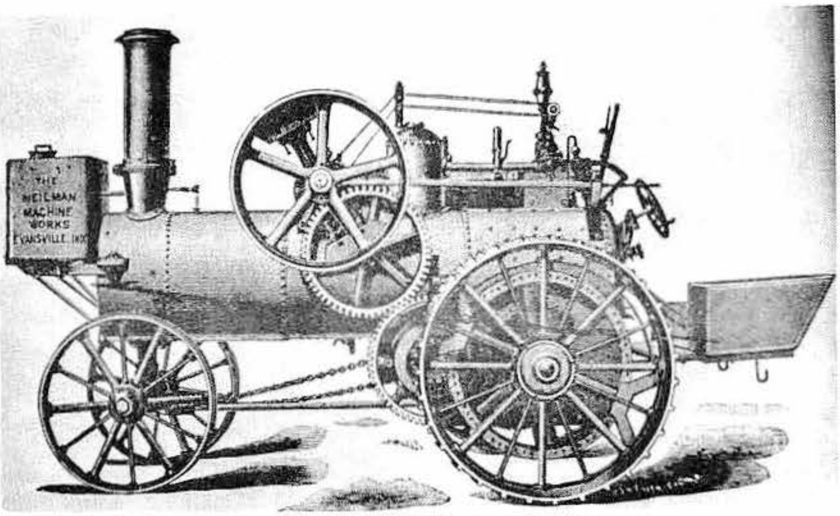
The Heilman Machine Works made the following: steam traction engines, Heilman thresher, portable steam engines, Heilman standard self contained engine, Heilman double geared hoisting engine, Heilman steam road rollers, saw mills, motion hoisting engine, and water wagons.

A 12 H.P. Heilman steam traction engine built by Heilman Machine Works of Evansville, Ind. This engine owned by Paul Hahn of Westminster, Md. It is believed to be the only 12 H.P. Heilman running today. William Heilman was born in Bermersheim, Hesse-Darmstadt, Germany, in 1824. In 1843 the family emigrated to new Orleans. Then they located in Posey County, Indiana.

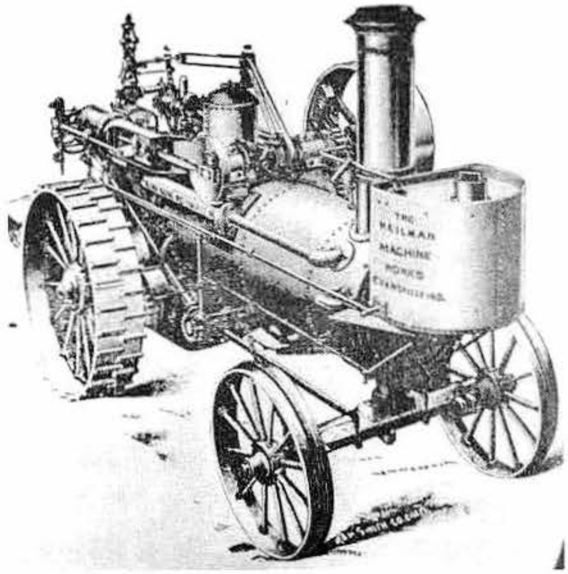


Produced in 1893, this was called the "Improved" Heilman steam traction engine. In 1854 the Heilman Co. constructed its first portable steam engine, and in 1859 its first thresher. After 1859, the Heilman Co. manufactured the Heilman steam traction engines and threshers.

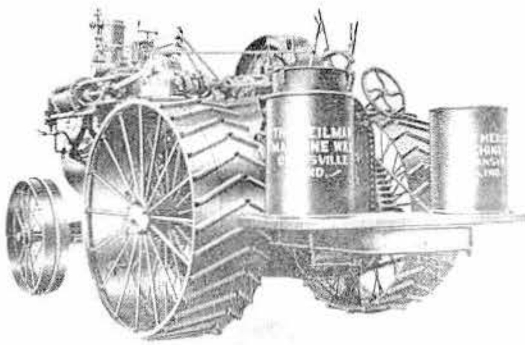
Heilman Machine Works



This is yet another version of the late 1890s Heilman steam traction engine. William Heilman, in 1847, engaged in the foundry business in Evansville with his brother-in-law, Christian Kratz. Their small machine shop on Pine St. was at first run by two blind horses. Three years later their log shop was displaced by a brick one, and the horses relieved by steam power.

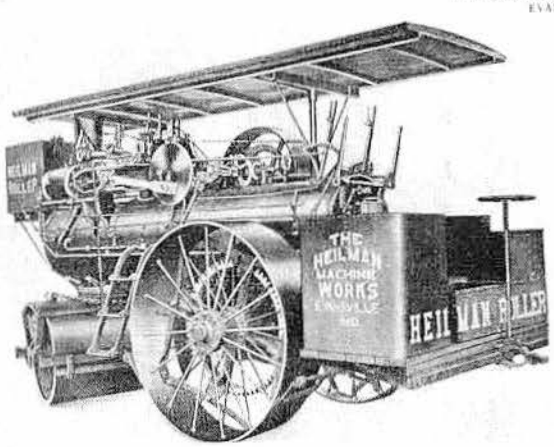


A Heilman steam traction engine of the late 1890s. The Heilman Machine Works made the following: steam traction engines, Heilman thresher, portable steam engines, Heilman standard self contained engine, Heilman double geared hoisting engine, Heilman steam road rollers, saw mills, motion hoisting engine, and water wagons.

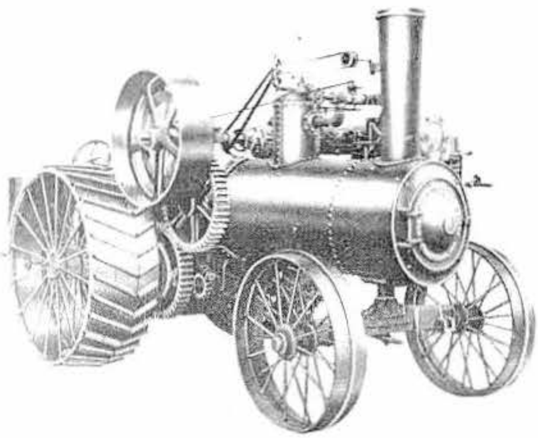


A rear view of the last model Heilman steam traction engine. The Heilman boiler was made of flange steel throughout of full rated horsepower, with a water-bottom fire-box having hand holes at the lower corners for easy cleaning, and one over fire door for filling the boiler. The engine was a rigid bored, girder-bed type with a heavy forged connecting rod and brasses and wrists of ample dimensions. The gearing was heavy and durable, being of steel alloy and the differential pinions were of the best quality steel.

THE HEILMAN MACHINE WORKS
EVANSVILLE INDIANA



A Heilman steam traction road roller engine. The Heilman cross shaft shift reverse design was used on the road roller after having demonstrated its dependability through 20 years of service on the engines.



This is the flywheel side of the last model Heilman steam traction engine. The cast iron smoke stack was of neat design and would outlast many sheet steel ones. The steering wheel and drive pulley were both on the right side for convenience in lining up for the belt. The engine platform was an all-steel frame with a wood top. The frame was rigid and arranged for attaching the patented adjustable plow and grader hitch with pull-low, giving great tractive power to the engine. The friction clutch had large friction surface and gave full power to drivers besides engaging and releasing with ease. The extension rims shown on this unit were supplied at extra cost.

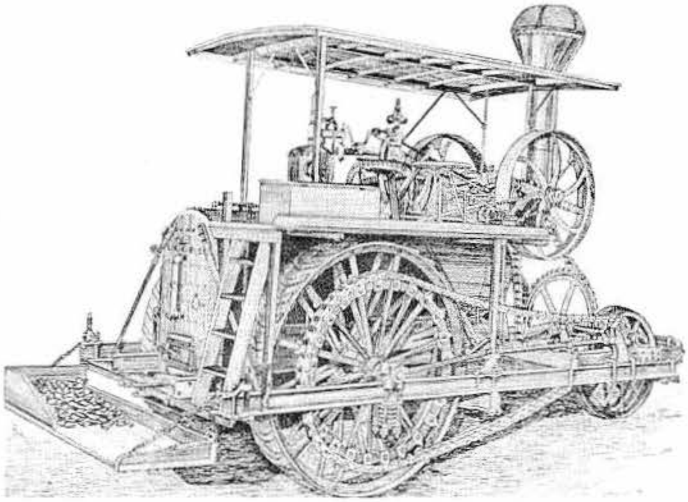
Holt Mfg. Co.

In 1890 Benjamin Holt, a Stockton, Cal., combine builder, produced his company's first steamer. In the following 24 years, Holt built 130 wheel-type steam traction engines.

The world's first practical track-type tractor was originated when Benjamin Holt who was president of the Holt Manufacturing Co., took one of the standard steam traction engines his company was making and replaced the wheels with a rough set of tracks. On November 24, 1904, the historic test of the world's first practical crawler tractor took place near Stockton. Tracks were not a new idea, but before Holt, no one had made them practical. Intending only to solve a local problem, Holt did not at first see the broad range of future uses for his new machine.

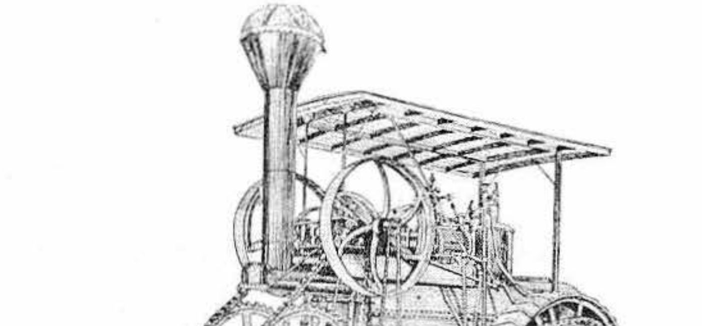
The "Farm Implement News," reporting on the new crawler in the spring of 1905 said: "In a tract where a man could not walk without sinking to his knees and where tule-shod horses could not be used, the new steam traction engine was operated without a perceptible impression in the ground. This tract of land has been useless for crop raising for several years because no way was found to plow it, but the platform wheel steam traction engine has brought the land into use again. It is predicted that with the new device it will be possible to work any of the soft lands of the reclaimed districts and bring into cultivation thousands of acres of rich areas that are now unproductive."

Holt was the first to use the name "Caterpillar." He registered the trademark "Caterpillar" in 1910 with the U.S. Patent Office, and reported in his application that he had used the name since 1904. Today "Caterpillar" and "Cat" are registered trademarks of Caterpillar Tractor Co., whose world wide headquarters are located in Peoria, Ill.



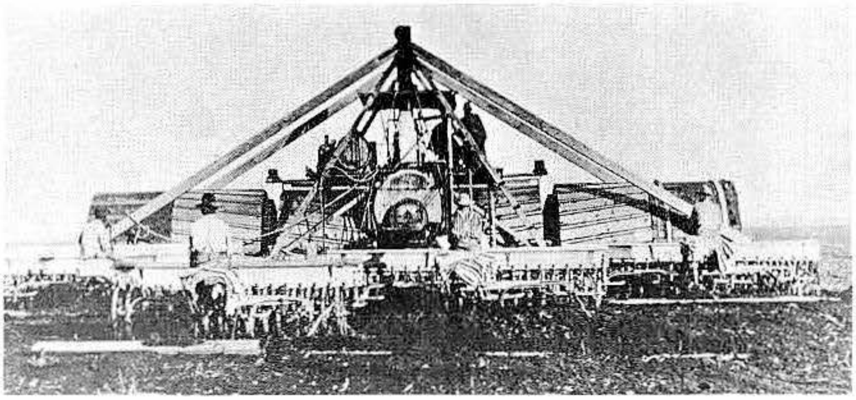
This contraption is a 60 H.P. Holt Bros. steam traction engine built by Holt Mfg. Co. of Stockton, Cal., in 1896. The cylinder was 11 x 12-inch. The main wheels were 16 inches wide by 6-feet 8-inches in diameter. A fire-box boiler was used. This engine sold for $4,500. In 1890 Benjamin Holt, a Stockton, Cal., combine builder, produced his company's first steamer. In the following years, Holt built 130 wheel-type steam traction engines, all of tremendous size.

This crawler is a 40 H.P. Holt steam traction engine, No. 77, the world's first practical track-type tractor design. One of the features of this unit was power steering. It is shown pulling a 10-bottom plow. On this machine the engineer sat high above the "works." The fireman is on the lower platform.

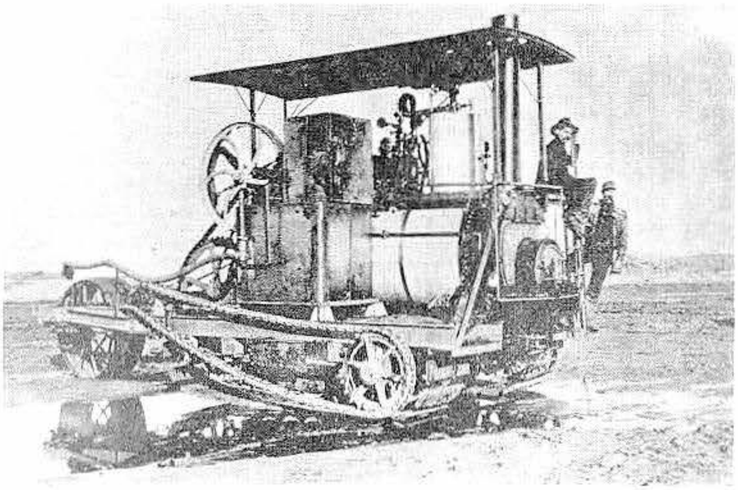


This is the front view of the 3-wheel 60 H.P. Holt Bros. steam traction engine built by Holt Mfg. Co. in 1896. The world's first practical track-type tractor was originated when Benjamin Holt, who was president of the Holt Manufacturing Co., took one of the standard steam traction engines his company was making and replaced the wheels with a rough set of tracks. On November 24, 1904, the historic test of the world's first practical crawler tractor took place near Stockton. Tracks were not a new idea, but before Holt, no one had made them practical. Intending only to solve a local problem, Holt did not at first see the broad range of future uses for his machine. The Holt wheel tractors of the type shown here were intended primarily for logging or freighting in the Pacific northwest. They were rather complicated machines of huge proportion, requiring two men for operation.

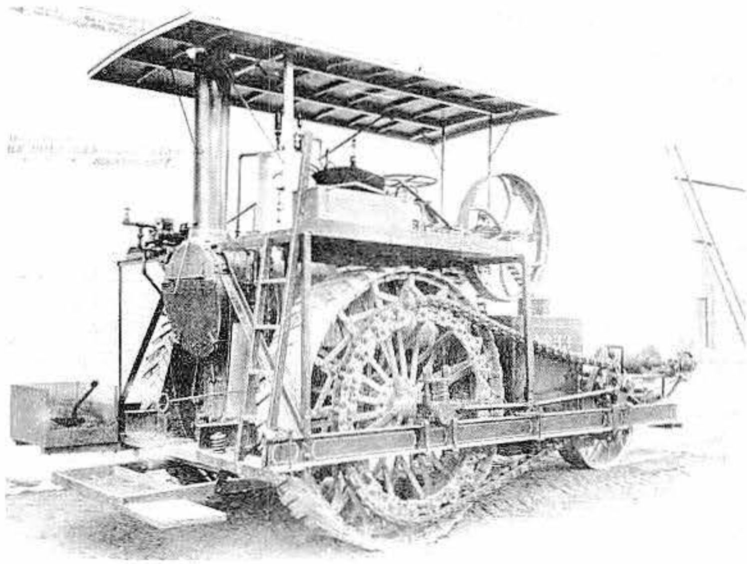
Holt Mfg. Co.



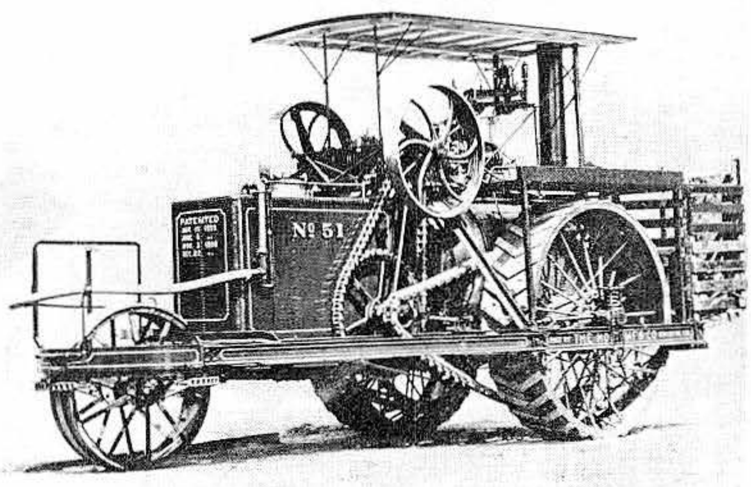
Yes, this is really a tractor. It is a 60 H.P. Holt steam traction engine, almost 46 feet wide, working in California's San Joaquin Valley. Each of the six wheels was 7½ feet in diameter and six feet wide. Holt built the machine shortly after the turn of the century; then added the extra wheels to keep it on top of the soft ground. The engine worked well enough on the straightaway . . . but it was difficult to turn and impossible to get through fence rows, across bridges, or down roads, even though the four outer wheels could be detached for traveling.



Funny looking as it is, this is the second or third steam traction engine built by Holt on tracks. The first one had two chains, two sprockets and two idlers on each track. Here is the machine as it appeared in the trial run on Roberts Island, near Stockton, Cal., in the spring of 1905. Track shoes were heavy blocks of wood and the tracks revolved on rough sprockets driven by long exposed chains which obviously were of short life. Caterpillar Tractor Co. of Peoria, Ill., is the successor to the Holt Company.



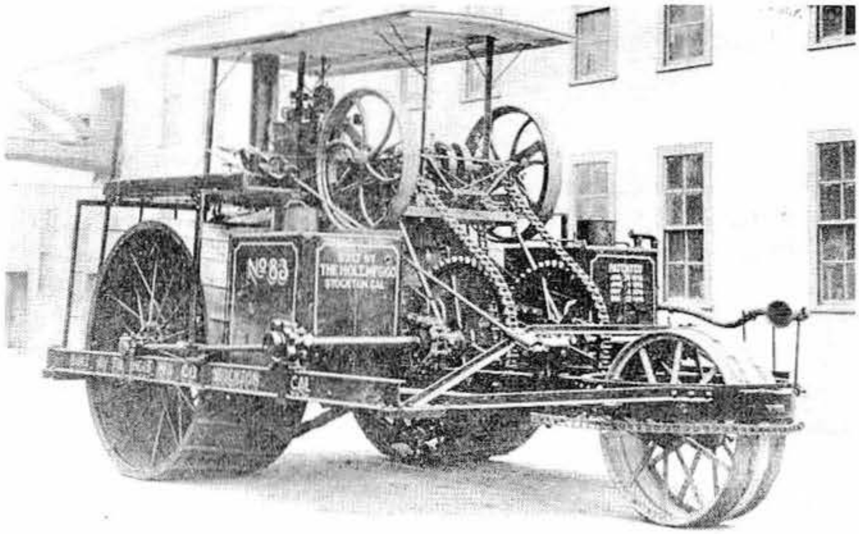
This is Holt steam traction engine No. 33. In 1890 Benjamin Holt, a Stockton, Cal., combine builder, produced his company's first steamer. In the following 24 years, Holt built 130 wheel-type steam traction engines.

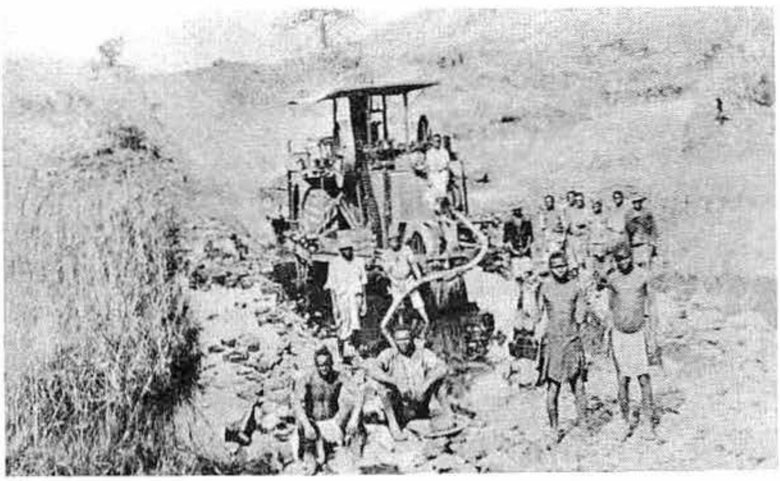


This is Holt steam traction engine No. 51. Holt was the first to use the name "Caterpillar." He registered the trademark "Caterpillar" in 1910 with the U.S. Patent Office, and reported in his application that he had used the name since 1904. Today "Caterpillar" and "Cat" are registered trademarks of Caterpillar Tractor Co., whose world-wide headquarters are located in Peoria, Ill.

Holt Mfg. Co.

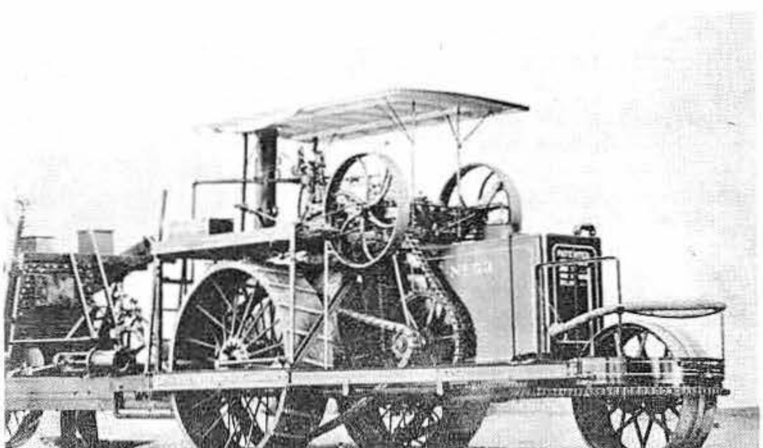
This monster is Holt steam traction engine No. 83. This engine was well adapted to resilient soils, such as bog and sand lands. It was most economical in fuel and running expenses. It could be turned within its own length.



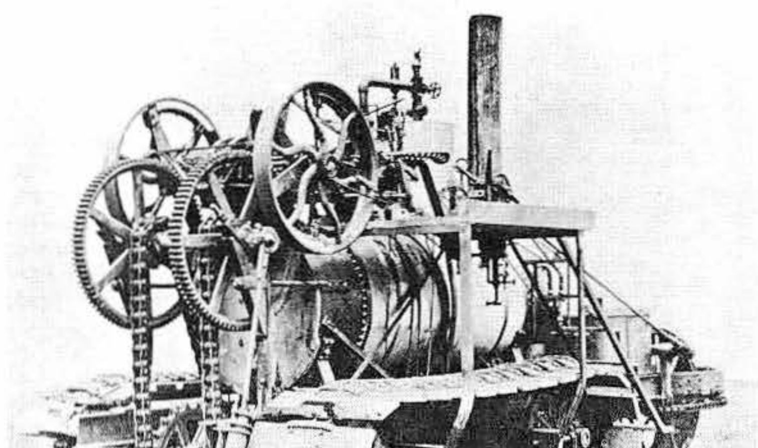


A Holt steam traction engine in Africa in the pre-Caterpillar days. It looks like the crew stopped to take on water. It is safe to assume that this Holt was employed as a road locomotive for the transportation of goods, and was not used for agricultural purposes.

This is Holt steam traction engine No. 53. This engine is equipped with a steam power take-off, which was used for breaking on mountain roads, power threshing, and aiding up-hill freighting . . . in other words, as an auxiliary engine.



Holt's first regular production model steam traction crawler was sold in 1906 to the Golden Meadow Developing Co. for use in the Louisiana delta lands. The price was $5,500. The open gearing and drive chains, plus the exposed engineer's seat adjacent to the whirling flywheel would certainly give fits to today's safety experts.



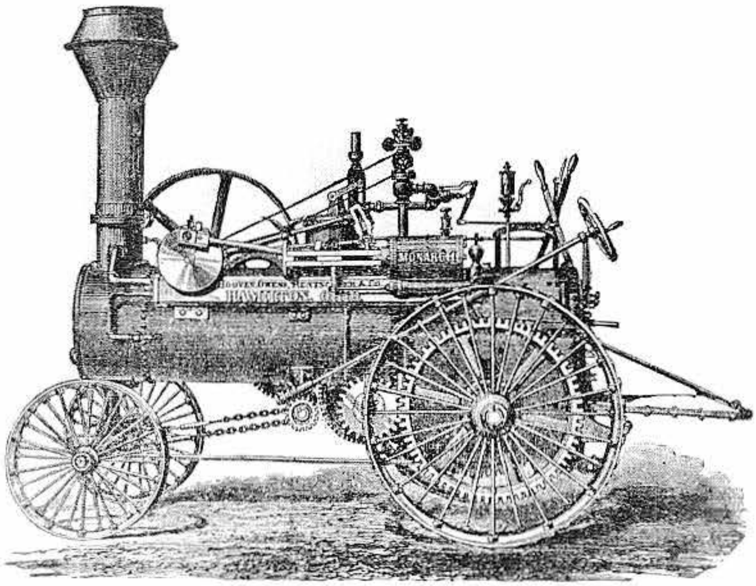
Hooven, Owens, Rentschler Co.

George H. Rentschler, owner of a small foundry in Hamilton, Ohio, with his partner, J. C. Hooven, and George H. Helvey, had been making their own portable steam engines and threshers under the trade name "Monarch."

They subcontracted their engines to one shop and their threshers to another, with all parts being farmed out to still other firms. Rentschler and partners reorganized about 1880, it is believed, with a consolidation with the Owens, Lane & Dyer (General Machinery's book has it: "In 1882 this firm was reorganized by the original George A. Rentschler and his associates, J. C. Hooven, Henry C. Sohn, George H. Helvey and James E. Campbell, and became the Hooven, Owens, Rentschler Company.")

Ads from old farm papers indicate the new firm showed their Monarch steam traction engine at the St. Louis fair in 1881, where it was awarded first prize as the most powerful engine on display there.

Records prove that about 1890, Ritchie & Dyer took over the engine and thresher business of this old outfit.



The Hooven, Owens & Rentschler Co. of Hamilton, Ohio, produced the "Monarch" steam traction engines around 1882. The engines, all of approximately the same outward appearance, were made in 10, 12 and 16 H.P. sizes. The company claimed that the 16 H.P. size had the capacity to pull up to 50,000 lbs. on ordinary roads. The wheels were from 8 to 12 inches wide, and a patented claw attachment could be furnished for use on muddy roads. The company claimed that its new dome effectively prevented the engine from drawing water when laboring, possibly insinuating that earlier designs had been a bit troublesome. The engine also used a link motion reverse. Despite an apparent local popularity of these engines, it is believed that none exist today. Furthermore, this is the only illustration that could be found of the Monarch engine, even though a similar machine was awarded first prize at both the 1881 Great St. Louis Fair and the Atlanta Cotton Exposition of 1881. The Hooven, Owens & Rentschler Co. also made the Monarch vibrator threshers.

Huber Mfg. Co.

Edward Huber was founder of the Huber Mfg. Co. He was born n Kelso, Indiana in 1837. His parents were German farmers, and uring his boyhood he worked on his father's farm. When he rew older he became an apprentice in a blacksmith shop. He was mechanic, and soon learned wagon making.

In 1865 he moved to Marion, Ohio, and manufactured a revolving hay rake which he had invented. He was so poor he had to orrow tools from his kind-hearted neighbors to work with. That ame year he married Miss Elizabeth Hammerle of Kelso, Indina. After the marriage her brothers came to Marion, to start a lanning mill, known as the firm of Kowalke and Hammerle, vith Mr. Huber as superintendent. In connection with the mill hey began the manufacturing of the Huber hay rake. In a few ears the other men retired.

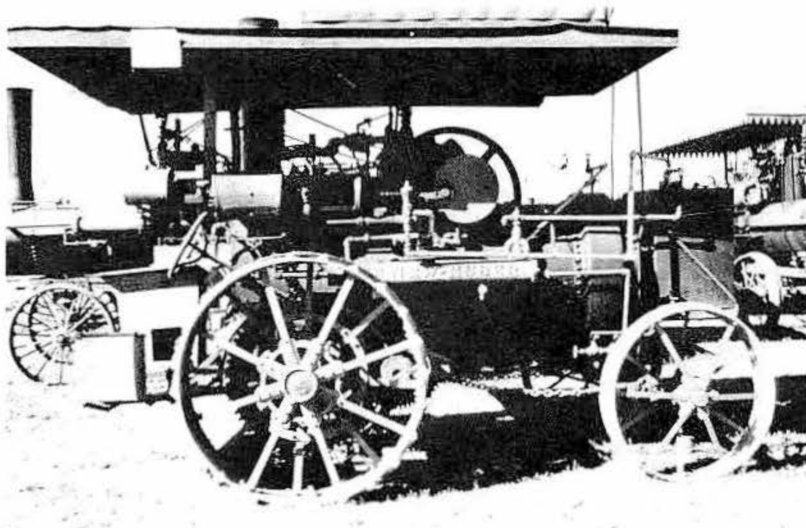
Huber then invented a traction engine and formed a company alled Huber, Gunn and Company, to put the engine on the narket. The venture proved so successful that in four years the Huber Mfg., Co. was organized, with a capital stock of $75,000. n 1880 the company started to manufacture grain spearators.

Then he set on foot many other enterprises, such as the Marion Steam Shovel factory, and the Marion Malleable Iron Works. He was president of the Marion National Bank. More than 100 patents had been granted him.

The Huber steam traction engine was of the return flue boiler type. The Huber Co. was the original builder of this type of steam raction engine. The Huber boilers were built in the form of a louble cylinder. The center one, which constitutes the fire flue, is wo inches smaller in diameter at the front than at the rear, which greatly adds to its stiffness, and enables it to have the greatest volume of water where there is the most intense heat. In the Huber there were two points of intense heat; directly over the fire and in the combustion chamber at the front end. This insured perfect circulation in somewhat the form of the figure eight. Without this circulation, the water remains "dead" and steaming s a matter of great difficulty. The water jacket surrounding the combustion chamber served the double purpose of preventing too much heat at the front end, as the return through the small flues was made, and further utilizes this heat for steaming purposes, as water circulated through it as freely as through any other part of the boiler. In a fire box boiler, this heat is lost through the stack and is estimated to be from 60 to 75 per cent of the heat units of all fuel consumed.

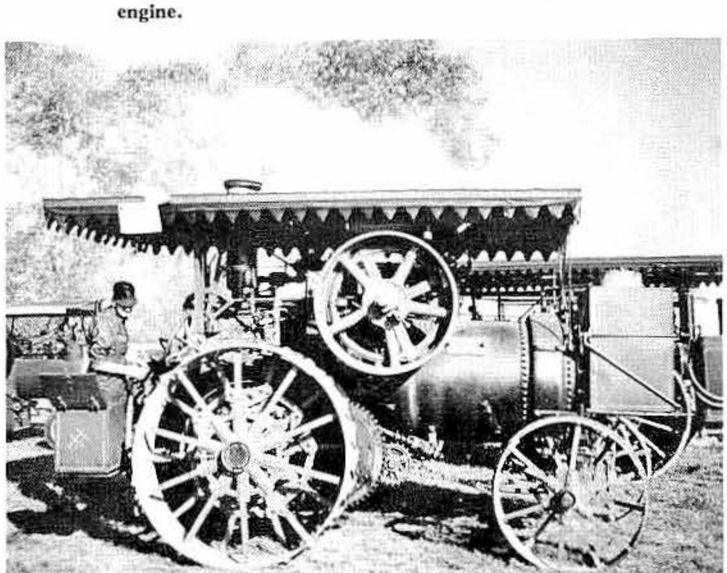
The Huber Co. made the following: Return flue steam traction engines; return flue steam portable engines; the Huber double cylinder steam traction engines; the Huber skid steam engines; steam road rollers; the Huber threshing machinery; bean and pea threshers; rice threshers with grader; water tanks; Real Power Lift plow, and Ideal one-man outfit.

From the late 1800s to early 1900s, the Huber Co. was known to be one of the largest manufacturers of threshing machines and steam traction engines in the U.S.A. The company still manufactures large construction equipment today. The Huber Co. was established in 1863. The home office today is Marion, Ohio. This company made 11,568 steam traction engines.

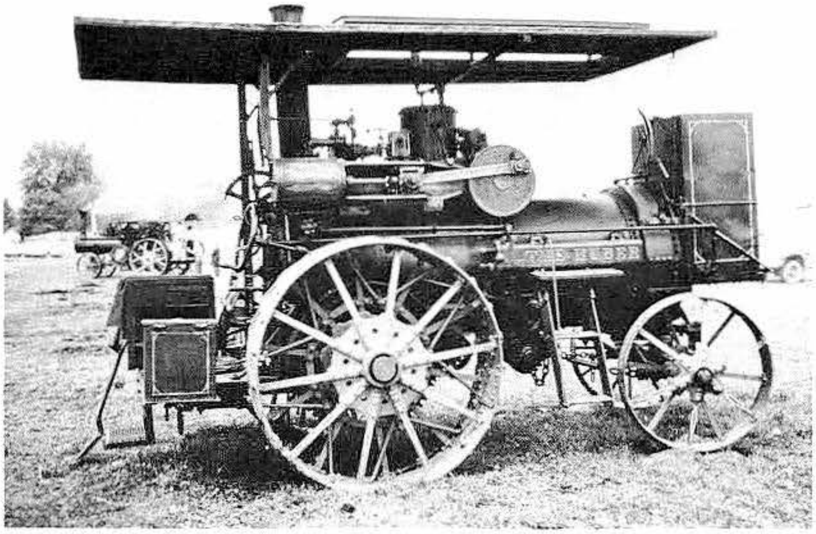


A 14 H.P. Huber steam traction engine built by Huber Mfg. Co. of Marion, Ohio, in 1886. This engine is owned by Jim Malz, of Richland Center, Ohio, and is on display at the Pioneer Steam & Gas Engine Society show at Meadville, Pa. Edward Huber was founder of the Huber Mfg. Co. In 1865 he settled in Marion, Ohio, and manufactured a revolving hay rake which he had invented.

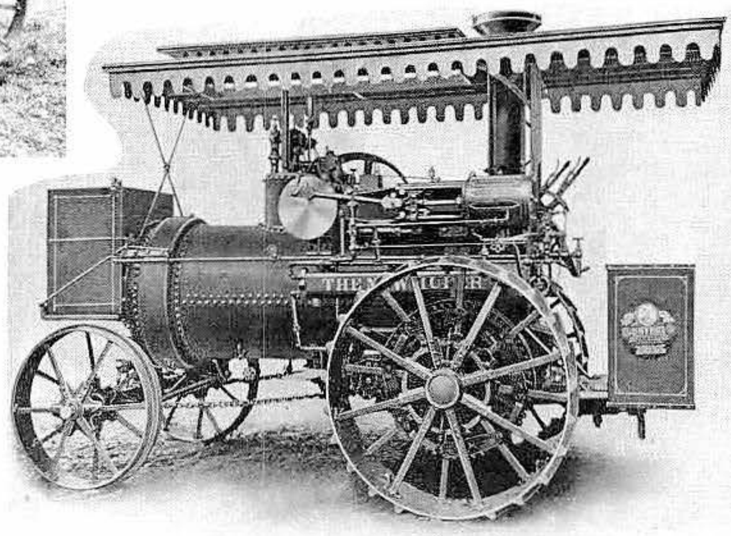
Getting up a head of steam is this 16 H.P. Huber steam traction engine, built in 1905. This engine is owned by J. H. Holmes of Moundsville, W.Va., and is participating in the Stumptown Steam Threshers Assn. show at New Athens, Ohio. The Huber steam traction engine was of the return flue boiler type. The Huber Co. was the original builder of this type of steam traction engine.



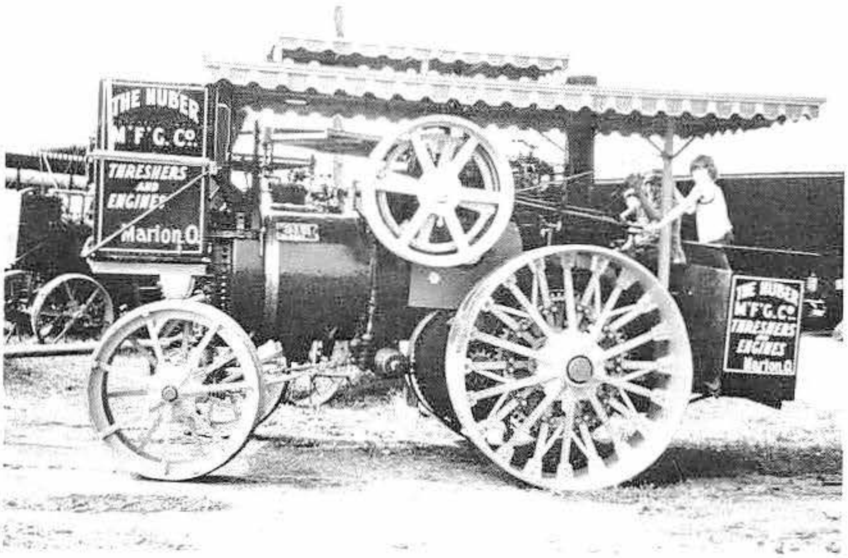
Huber Mfg. Co.



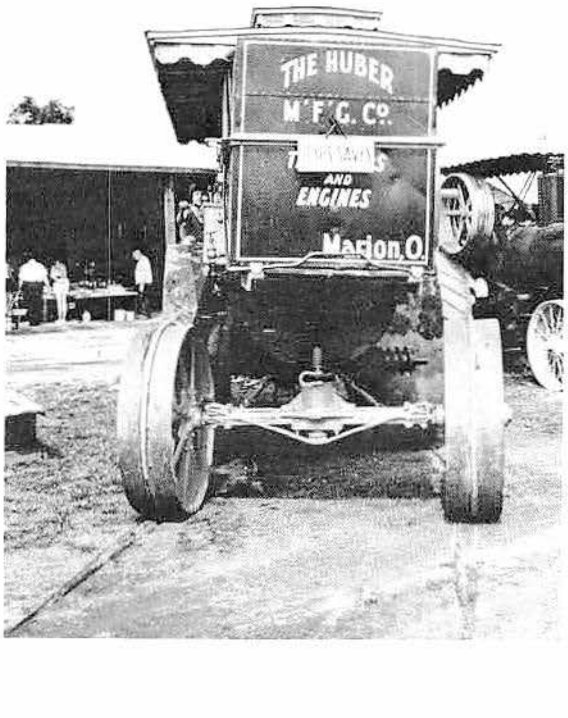
This 16 H.P. Huber steam traction engine is owned by Billie Bixler of Orrville, Ohio. It is on display at the Tuscarawas Valley Pioneer Power Assn. show at Dover, Ohio.



This 1905 Huber steam traction engine was built in 8, 10, 12, 16, 18, 20, 25 and 30 H.P. sizes. This engine received the highest award at the 1893 Columbian Exposition, and the highest award at the 1904 Louisiana Purchase Exposition.

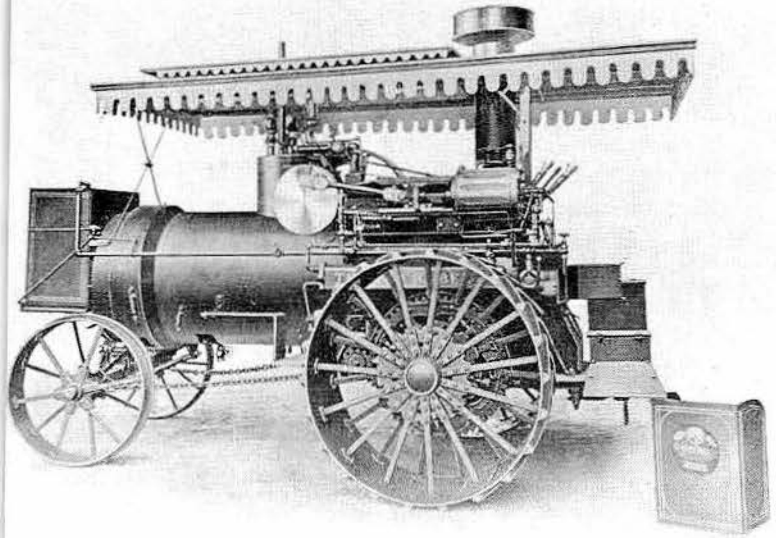


This 16 H.P. Huber steam traction engine, built in 1910, is owned by Henry Dull of Alum Bank, Pa. It usually participates in both the Morrison Cove Pioneer Power Reunion at Martinsburg, Pa., and the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa.

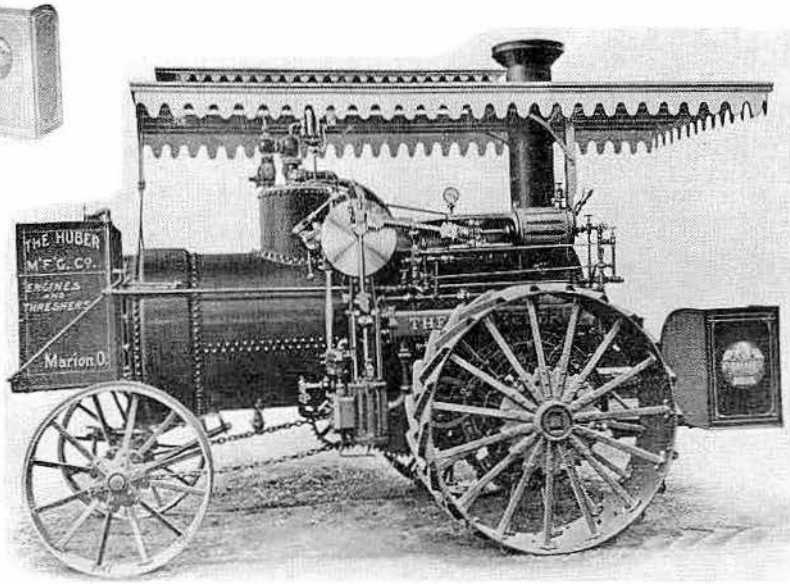


Here is a good close-up of the front end of the Dull's engine and the big water tank mounted on the front end. The show's flea-market space is visible in the background.

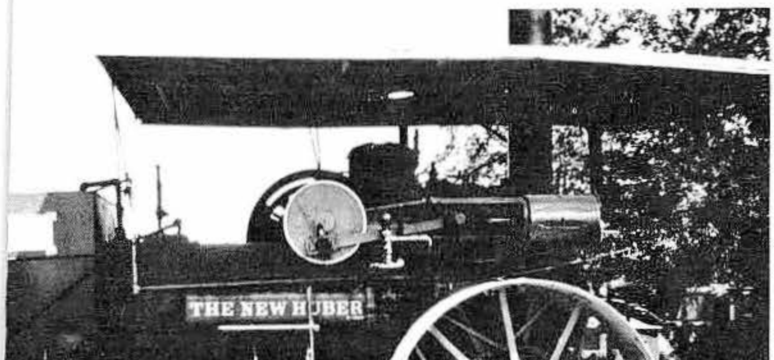
Huber Mfg. Co.



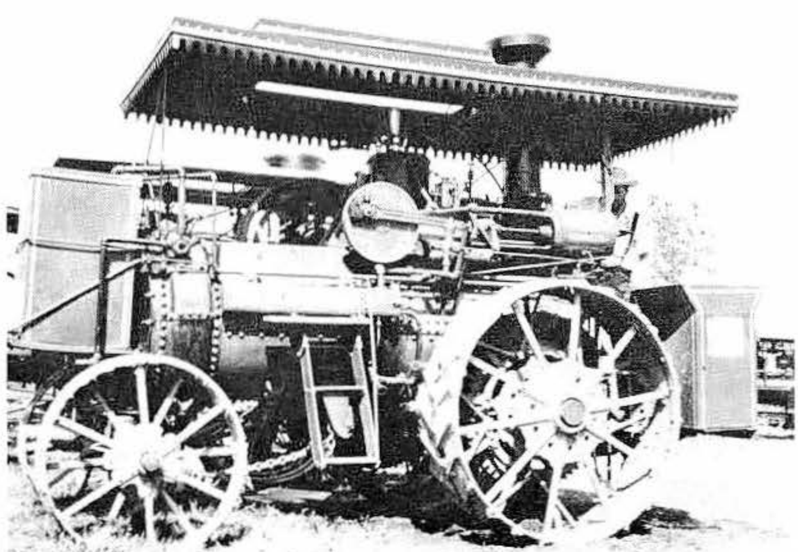
The 1905 model Huber straw burner steam traction engine was built in 16, 18, 20, 25 and 30 H.P. sizes. It could be ordered with either a plain or a jacketed boiler. Huber was readily identifiable by its compact, almost squatty appearance, and by the fancy scalloped trim used on the canopy. All Hubers used a front-mounted water tank.



The Huber double cylinder steam traction engine of 1905 came in 17, 19, 21, 26 and 32 H.P. sizes. This was combination of the original upright Huber engine, built for many years, and the later horizontal type. The working quarters were both on the same wrist pin, which had been made especially strong. It had less than one-half the usual friction wearing surfaces. This eliminated the danger of getting out of line and all breakages incident to a crooked center shaft used by other double engine builders. Note that one cylinder ran in a horizontal plane while the other ran in a vertical direction.

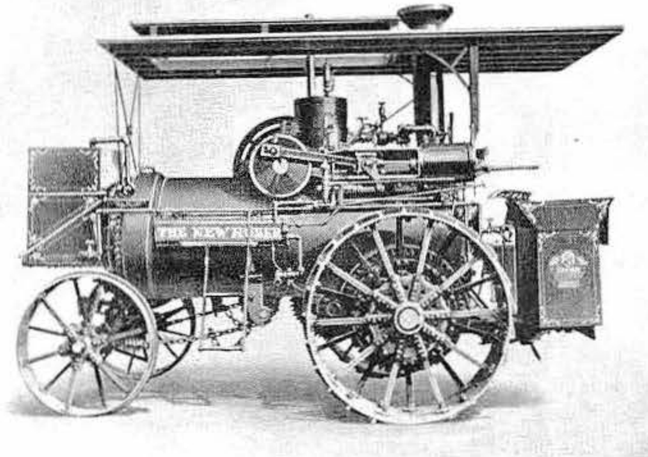


On display at the Tukahoe Steam & Gas Assn. show at Easton, Md., is this Huber steam traction engine owned by Sam Fairbanks of Preston, Md. Mr. Fairbank's engine appears to be of about 1913 vintage, judging by the design of the wheels, cylinder and canopy. From the late 1800s to the early 1900s, the Huber Co. was one of the larger manufacturers of threshing machines and traction engines in the U.S. The company is still in business today, manufacturing heavy construction equipment. During its steam traction engine era, the company built 11,568 engines.

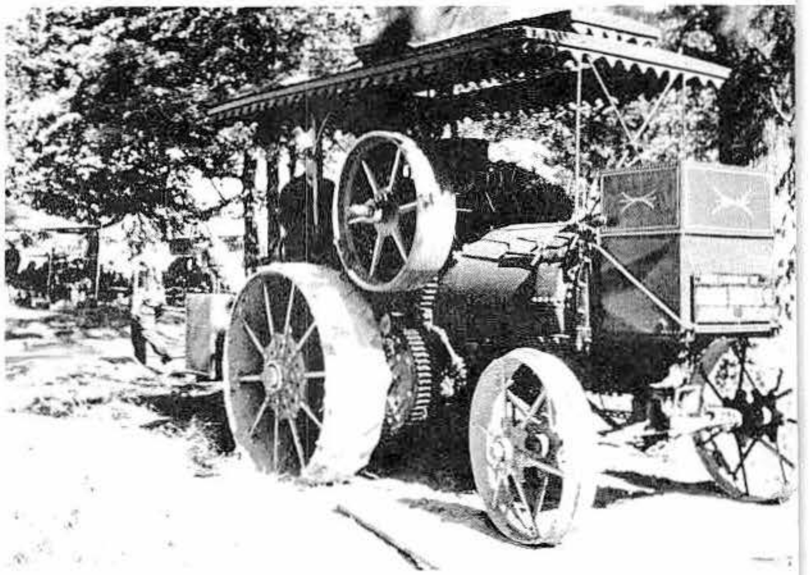


Paul B. Stoltzfoos of Leola, Pa., gets set to fire up his 1912 model 16 H.P. Huber steam traction engine during the annual show of the Rough & Tumble Engineers Historical Assn. The 16 H.P. Huber was considered a splendid size engine for general belt work, such as corn shredding, hay baling, and feed grinding.

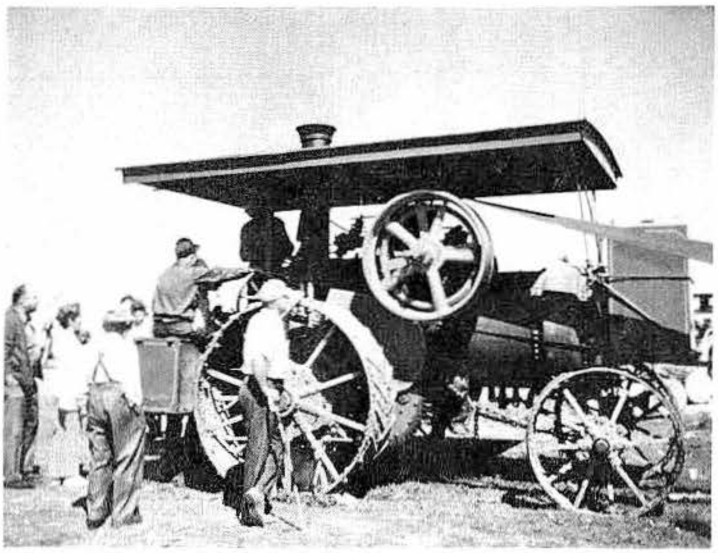
Huber Mfg. Co.



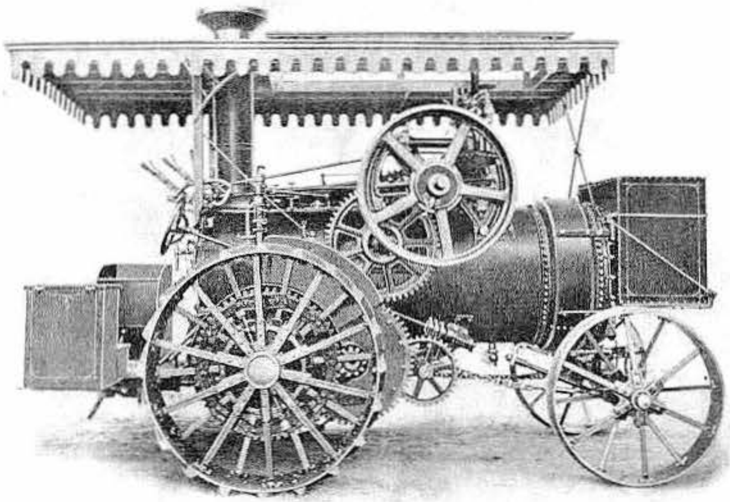
The smallest Huber built in 1915 was this 16 H.P. steam traction engine. Its moderate size and relatively light weight made it a practical engine for the individual farmer or for partnership outfits. Larger engines were recommended only for very large farms or contract threshers and plowmen. This unit was recommended for threshers up to 28 x 48 inches in size.



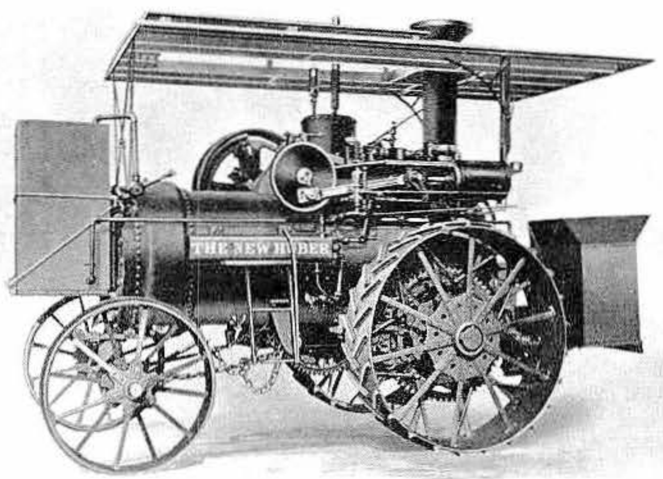
This 16 H.P. Huber steam traction engine, built in 1920, is participating in the Richland County Steam Threshers Assn. show at Mansfield, Ohio. The engine is owned by Gilbert Oborn of Kenton, Ohio. This engine is equipped with the original canopy cab, front water tank, fuel and tool boxes, oil pump, hose, wrenches, oil cans, and all tools necessary to operate.



Hard at work on the belt is this 18-50 H.P. Huber steam traction engine, built in 1913. This engine is owned by Ira Prickett of Mount Pleasant, Iowa, and is being operated at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant. Ira Prickett purchased this engine a number of years ago from John Wyckert of Columbus Junction, Iowa. John Wyckert had purchased the engine new in Des Moines, and used it for threshing and running his sawmill.

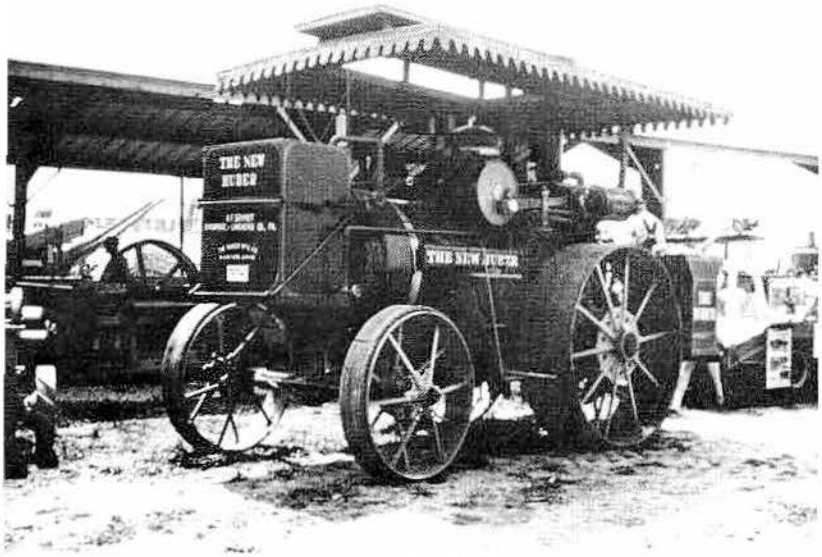


This is the gear or flywheel side of the 1915 model 18 H.P. Huber steam traction engine.

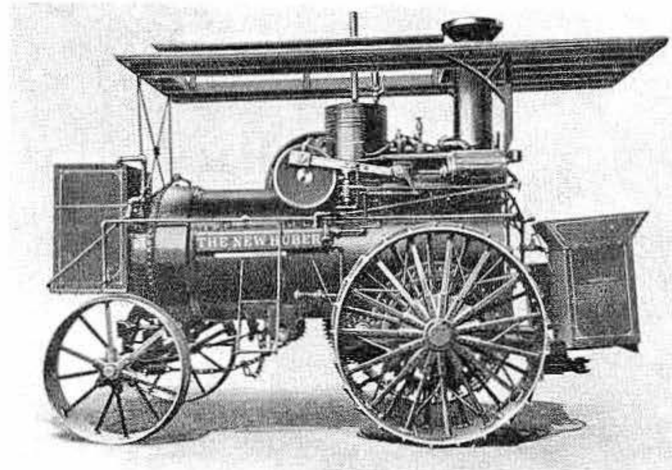


A factory installed ladder was standard on the engine side of the 1915 model 18 H.P. Huber steam traction engine. The 18 H.P. engine was about the most popular size, particularly in the central states. It had a wide range of usefulness, and was recommended for the 32 x 54-inch separator. It was not too large for general farm work, yet large enough for commercial threshing. It had strong traction power.

Huber Mfg. Co.

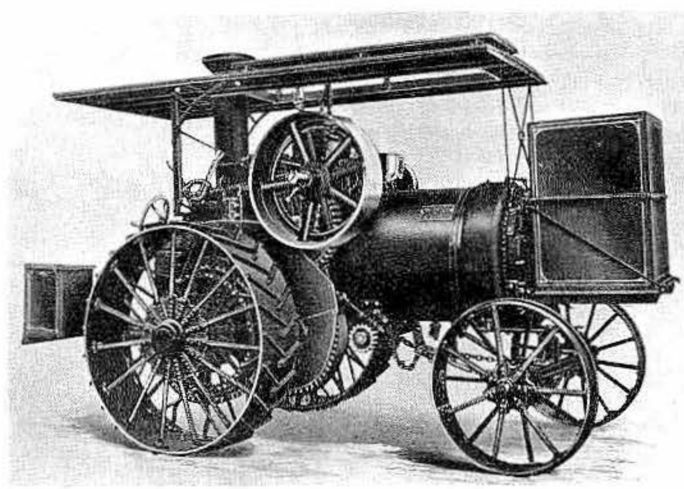


Now residing in Washington, D.C., is this 18 H.P. Huber steam traction engine, built in 1921. This engine was owned by Amos Brandt of Bainbridge, Pa. Mrs. Brandt, in cooperation with the Huber Co., donated this engine to the Smithsonian Institution. This engine was the last one manufactured by the Huber Co. According to Mrs. Brandt, the 12-ton engine will be located in the first floor exhibit of the Smithsonian's new Agriculture Department just off Pennsylvania Avenue.

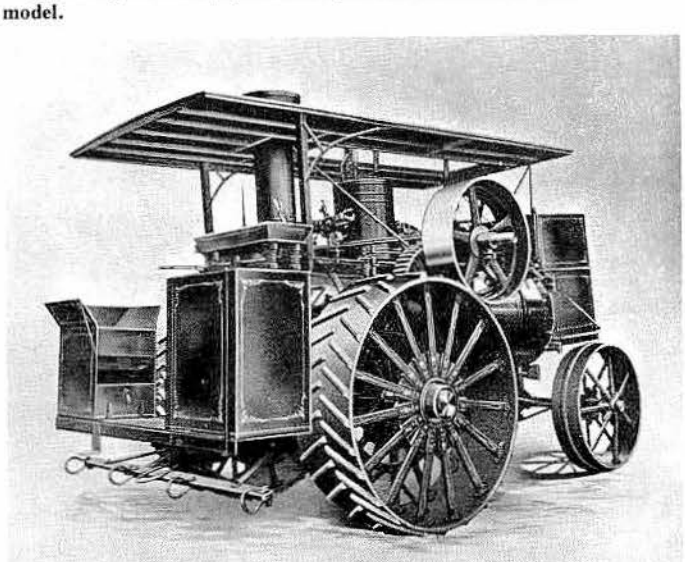


A 20 H.P. Huber steam traction engine, as pictured in a 1915 Huber Mfg. Co. catalog. In all Huber engines, the weight was well distributed, and as low as possible consistent with great strength and durability. The engines were designed for general work on the farm, and were easily handled by any man with a little knowledge of steam power.

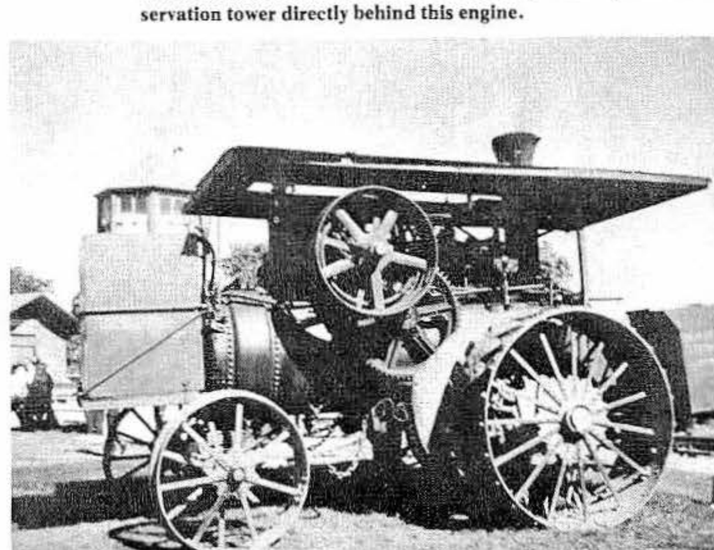
Built in 1915, this 25 H.P. Huber was equipped with a cylinder of 10-inches diameter by 12-inches stroke. All Huber engines followed the same basic design, and differed only in size as the horsepower increased. All could be equipped with a friction power steering unit to assist operators while plowing or traveling over rough ground.



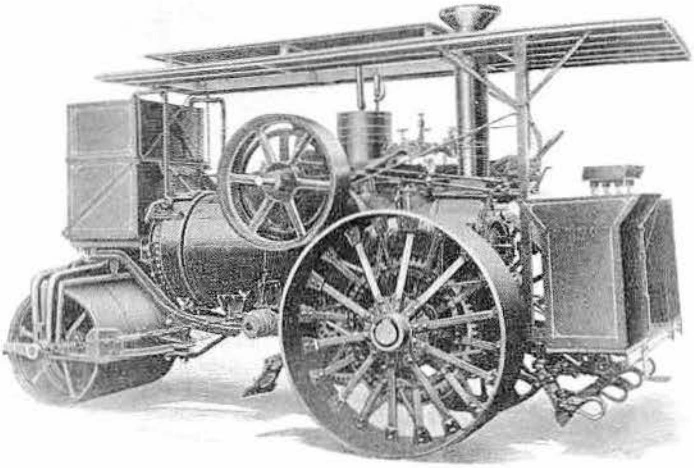
This rear view of a 30 H.P. Huber steam traction engine shows the plow attachment. The 30 H.P. was the largest and most powerful steam traction engine that Huber built. It was designed for all kinds of work that required more than ordinary power. It easily ran the largest threshers with all attachments, and would pull big plowing outfits. It was extensively used by road contractors for hauling material, and for grading. The construction throughout—drive wheels, gearing, shafting—gave ample strength for every possible requirement. This is the 1915 model.



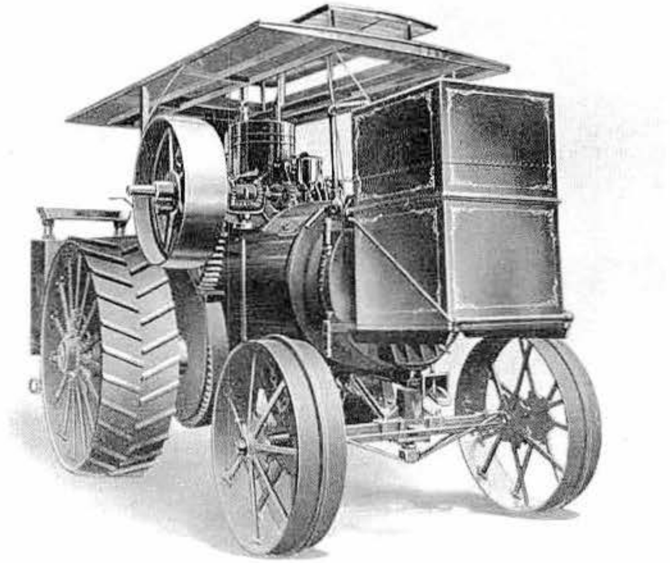
Among the largest of the Hubers was this 30 H.P. double cylinder engine, built in 1910. It is owned by Neil McClure of Colchester, Ill., and is seen here quietly steaming at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Ia. No, the water tank is not equipped with windows. A photographic illusion resulted here when the camera caught the top of an observation tower directly behind this engine.



Huber Mfg. Co.

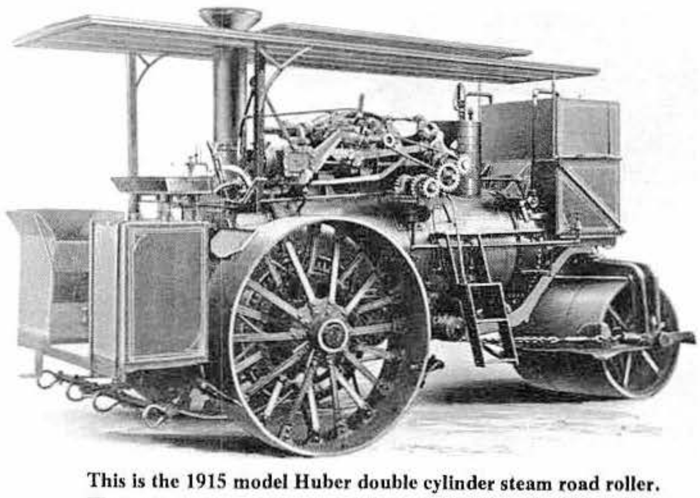


In 1915 Huber produced this single cylinder road roller. The Huber steam road roller was especially well adapted to the construction of macadam and gravel roads. It had ample weight for compacting the crushed stone or gravel, and the weight was properly distributed. Wheels were beveled so as to give a proper crown to the finished road.



The "friction guide," or power steering unit is visible behind the flywheel on this 1915 model 30 H.P. Huber steam traction engine. All Huber boilers could be equipped for burning straw. The easy steaming qualities made them exceptionally good straw burners. This engine is equipped with a belt pulley, fitting it to operate different kinds of belt driven machinery.

A Huber steam road roller, with scarifier attached, is working on a street. The scarifier attachment was made by Huber. Note that two men are required to operate this machine.



This is the 1915 model Huber double cylinder steam road roller. The steam roller engines were single or double cylinder. All styles were equipped with the friction guide, giving quick control at all times. For tearing up old streets for re-surfacing, a scarifier attachment was furnished. It would break up and pulverize the old material, leaving it in shape for the grader. After the grader brought it into shape, the roller was used and the old road was made as good as new, with very little expense for material.

Illinois Thresher Co.

The Illinois Thresher Co., was started by William N. Rumely who was the son of Meinard Rumely who started the M. Rumely Co., of LaPorte, Indiana. Wm. N. Rumely was President and general manager, G. E. Dutton was Vice President and treasurer, and P. B. McIntyre was secretary and sales manager, and W. C. Roby, superintendent of the Huller and Thresher Dept.

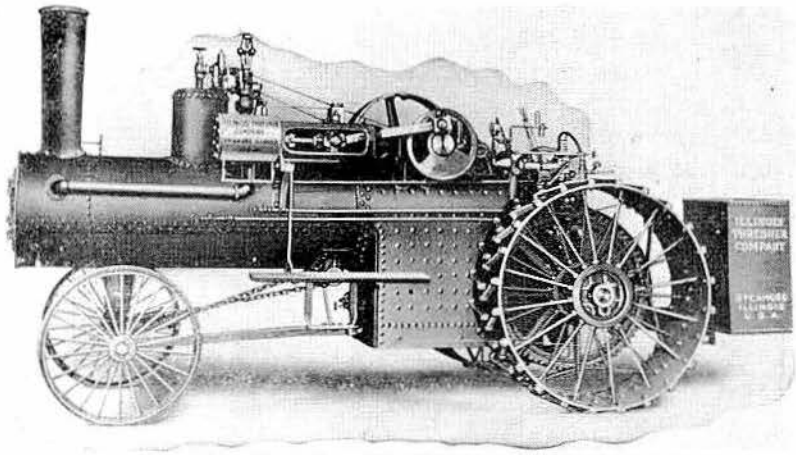
These men started the Illinois Thresher Co. in Sycamore, Illinois. They bought a large tract of ground, on which were located their various big buildings, which at one time were used by the Marsh Harvester Co., Elwood Wagon Co., and F. C. Patton Co. The buildings stood along the west side of Park Ave., and in all, the plant comprised about a hundred thousand square feet of floor space, entirely adequate for a good annual output.

The Illinois steam traction engine was a double geared, rear mounted steam engine. The boiler was built larger in size than was required by the accepted engineering standards at that time. It used the best quality of open hearth boiler steel, tested at 60,000 pounds tensile strength. The tubes were of the highest grade of steel, and to insure strong and lasting union, they were surrounded by copper ferrules where they entered the flue sheet of the fire box. Stay bolts, 7/8 inch, were placed every 4-3/8 inches and 4-9/16 inches from center to center in the fire box. These were provided at both ends with large beaded heads. The steam dome was very large in size, well braced, and located in position to furnish at all times a copious supply of dry steam. The fire box was of the arch type and was of generous size, furnishing a chamber for perfect combustion of fuel. Their boilers were tested under hydrostatic pressure of 225 pounds of cold water.

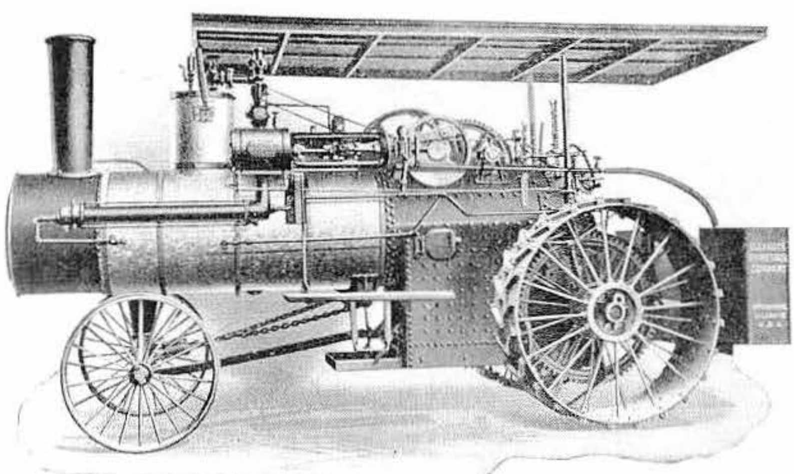
After the engines were mounted, they were again tested under steam pressure of both belt and traction power. The reversing device used on the engine was the Arnold single eccentric. They used the double ported valve, which was not commonly used by other engine builders because of its excessive cost.

Mr. E. J. Murphy told the author that this company built only 63 engines and then went broke.

The Illinois Thresher Co. made the following: steam traction engines; the Scientific Combination thresher-huller; a gearless wind stacker, and separators.



A catalog illustration of the 20 H.P. Illinois engine shows that the steam dome was relatively large in size, well braced, and located in a position to furnish a good supply of steam at all times. A safety plug was used in the crown sheet to protect the boiler against low water. The fire-box was of the arch type, and apparently of generous size. The boiler was thoroughly tested under a hydrostatic pressure of 225 pounds cold water. After the unit was assembled, it was again tested under live steam pressure for both belt and traction power.



The largest Illinois was this 25 H.P. steam traction engine. This was a coal, wood or straw burning engine with cab and jacket. The engine frame was of the self-contained Corliss type. The cylinder, steam chest, guides and pillow block were all combined into one casting of especially tough, close grained iron that was perfectly machined and made susceptible to lubrication. The boring of the cylinder and cross-head guide was done in one operation, both tools being carried by a boring bar which insured perfect alignment of all parts. The reversing device used was the Arnold single eccentric. The friction clutch could be engaged or disengaged, whether running at high or low speed. The draw bar was built to withstand several times its normal strain and was securely attached in close proximity to the huge brackets which took the forward thrust from the rear axle. Heavy cross bars held it in position against side thrusts.

Quietly puffing away in an Iowa orchard is this 20 H.P. Illinois engine, built by the Illinois Thresher Co. of Sycamore, Ill., in 1920. The engine is owned by E. J. Murphy of Council Bluffs, Ia. The Illinois Thresher Co. was started by William N. Rumely, who was the son of Meinard Rumely who was the founder of the M. Rumely Co. of LaPorte, Ind. Mr. Murphy's engine is No. 135. Today, there are three Illinois engines still operating.

D. June & Co.

David June, machinist and engine builder, of Fremont, Ohio, was born May 11, 1824, at Ithaca, N. Y., the son of Peter June, who was a sailor and ship-rigger.

In 1833, the family moved to Portland, now Sandusky, Ohio, where David attended school a short time, at intervals when he could be spared from work. He remained with his father until about 14 years of age, when he entered a machine shop to learn the machinest trade.

In the fall of 1838 he was cabin boy on the old steamer "Jack Downing," on the Sandusky river, which was his first experience at sailing. In 1839 he was cabin boy on the steamer "St. Clair" until she was laid up by the Combination Line, after which he went on the steamer "Sandusky."

In 1840 he assisted his father (who was a contractor on the Sandusky & Mansfield Railroad) by driving a team of plow and scraper, in the construction of he road-bed from Sandusky to Monroeville. In the winter of 1840-41, at Sandusky, he attended for a short time a school taught by Mr. Hickox, an Episcopal clergyman. In May 1841, he began a seven-year apprenticeship to learn the trade of mechanical engineering with a firm in Sandusky. During this time he also worked for a while with his brother-in-law, Charles Waterous, on the old Ohio Railroad, which was to pass through Sandusky county. This firm was doing the general repairs through the counties of Erie and Sandusky. Mr. June's work was to look after pile-drivers and saw-mills.

A dissolution of partnership of the firm to which he had been bound released him from his apprenticeship, and in April, 1842, he went to Cleveland and found employment in the Cuyahoga Iron Works. There he remained about 10 years, during that time filling the position of engineer on steamers of the Buffalo and Chicago Line during the summer seasons, and working in the shops during the winter seasons. During a part of 1843 he was second engineer on the steamer "St. Clair" and the rest of the year on the "Commerce."

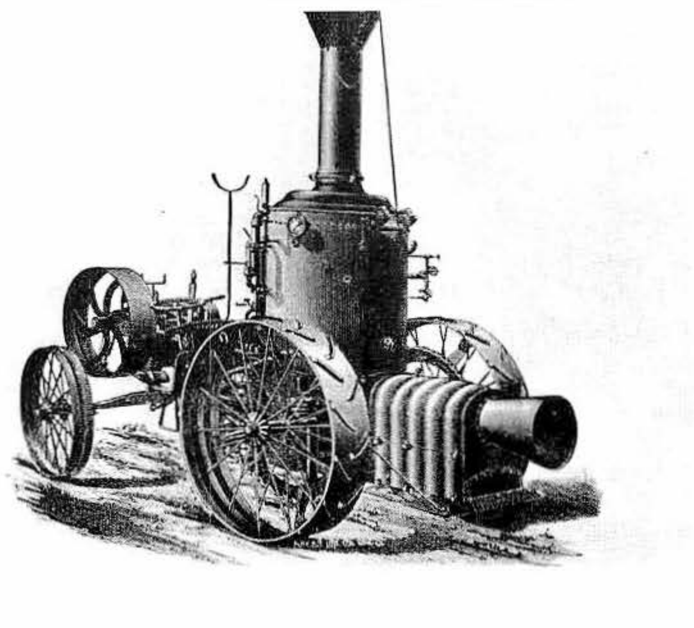
In the winter and spring of 1844 he assisted in building the engine of the steamer "Empire," and in August sailed on that steamer as second engineer, remaining on that vessel until June, 1847, when he went on the "Boston." In the summer of 1847 he took charge of the steamer "Detroit," until she was sent to Chicago. In the following winter he put in the engine of the "Monticello," at Fairport, Ohio. In the spring of 1848 he put in an engine for the "Ohio," and fixed engines for the "Republic" in the fall. He was on the "Republic" until July, 1849, when he was employed to fit out the steamer "Globe," at Cleveland, by the American and Liverpool Insurance Company, who were under contract to furnish the railroad iron from England for the C. C. & C. railroad, by January 1, 1850. Their vessels from Liverpool could not pass up the Welland canal, and the iron was unloaded on the banks. Mr. June was employed to deliver the iron for the company at Cleveland, and it took him from July until December 22 to do it.

He then returned to the Cuyahoga shops to work for the Lake Superior Line of steamers, in which employ he remained for a period of about eight years. This line extended from Cleveland to Sault Ste. Marie. In 1851 they built the steamer "Northerner" into which Mr. June put an engine and machinery; this was the first steamboat built for the Lake Superior trade. In 1853 they built the steamer "North Star," which cost $128,000. Having by industry and economy laid by some money, Mr. June in 1853 went to Fremont, Ohio, to start in business. He and a Mr. Curtis first bought out the plow shop of F. I. Norton, and began to fix it up for the building and repair of engines. Six months later Curtis sold out to Daniel L. June, and the June brothers continued together under the firm name of June & June until 1856, when Lyman Gilpin bought out D. L. June. D. June and L. Gilpin remained together as partners until November, 1859, at which time D. June became sole proprietor. He again took Mr. Curtis into partnership, but seven years later that gentleman retired, and three years after that a partnership was formed, consisting of David June, Robert Brayton, and O. S. French, under the firm name of D. June & Co.

The completion of the Toledo, Norwalk & Cleveland railroad in 1853 enabled Mr. June to bring engines from Cleveland for repair, and return them to the Lake Superior Company cheaper than the work could be done at Cleveland. His shops also received many orders for work from the surrounding country.

In the winter of 1855 he rebuilt the "Manhattan," whose engines were brought in by rail, and in the winter of 1857 he rebuilt the "North Star" at Fremont, Ohio. During these years Mr. June was away occasionally on Lake Superior to overhaul steamers and make repairs. In 1858, at the urgent solicitation of the Lake Superior Transportation Company, he left his business at Fremont, Ohio, in care of a partner lately taken in, and went to Cleveland to take charge of all the company's boats and keep them in running order. He remained there until 1860, when he returned to Fremont, Ohio, bought out his partner, and assumed entire control of the business.

He had quit the lakes in 1858, and now remained in Fremont permanently, in 1861 commencing the erection of new works, which were completed in 1877. After several changes of partners he associated himself with Robert Brayton, an old and skillful machinist with whom he had worked in Cleveland, and who



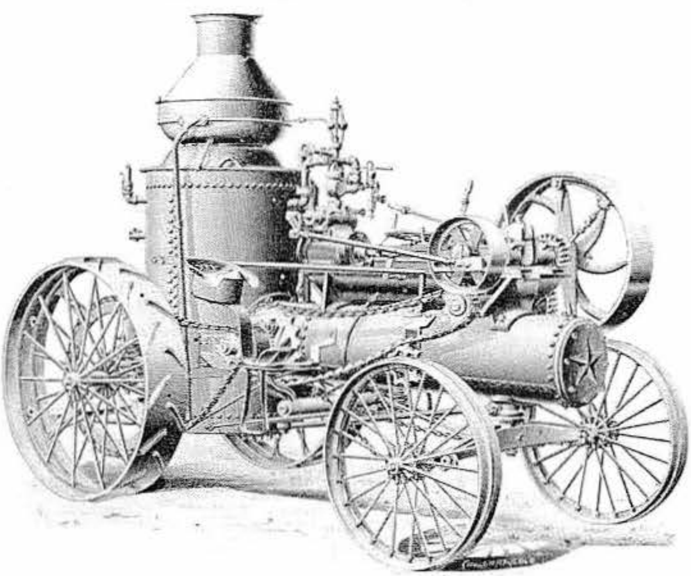
A 12 H.P. D. June "Champion" horizontal straw burner engine was pictured in 1891. This engine was identically the same as the Improved Friction traction engine, but the boiler was of new design. It was of the locomotive style, excepting it had a round fire-box. The combustion chamber for the straw was attached to the fire-box and so arranged that it could be readily removed in case of moving on the road or when using wood or coal as fuel. It was furnished with wood or coal grates, and they did not require removing when using the straw combustion chamber.

emained nine years and did much to make the ventures suc- :essful. Many valuable improvements in the building of engines vere made by this enterprising firm. They were the inventors of a elf-action spark arrester in 1875, which has come into general ıse. The engines built by the firm had a high reputation, and vere shipped all over the country. The firm also had two branch :oncerns, one at Waco, Texas, which did a business of about 5150,000 a year, and one at Council Bluffs, Iowa, which did an ınnual business of about $25,000. They had another at Austin, Texas, which they sold to A. R. Gossard.

In 1869 Mr. June took O. S. French as a partner, and the firm ıame became D. June & Co., by which it has been known ever since. In 1886 this firm divided up a one-third interest with S. A. June & Son, Martin Holderman and A. M. June. In 1890 S. A. June and Peter June, his son, surrendered their stock to D. June & Co., since which time the firm consisted of D. June, O. S. French, M. Holderman and A. M. June.

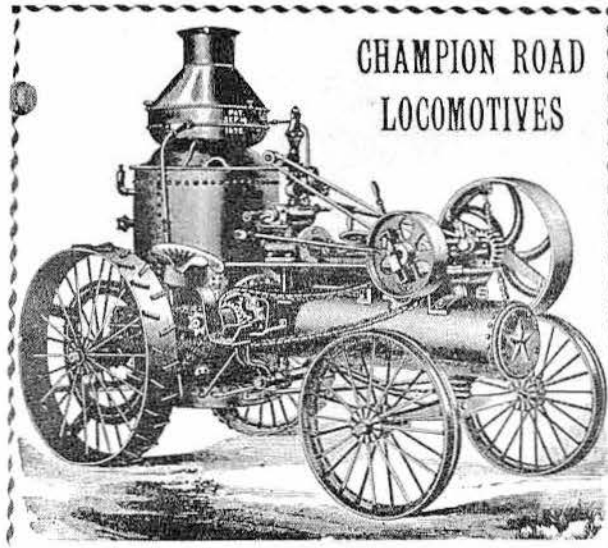
The company built the Champion portable steam engine and the Champion steam traction engine, self-contained girer frame engine with sub-base, stationary engines and boilers of any size, from 10 H. P. to 150 H. P., Champion pony saw-mills, and Locomotive boilers for oil wells.

The steam traction engines had the first spark arrester in the United States. The upright boilers never exposed the crown sheet and the flues would last much longer than in a horizontal boiler. Using cold water they would get up steam in about 20 minutes. The Champion engine was patented in 1875, 1876, and 1877.

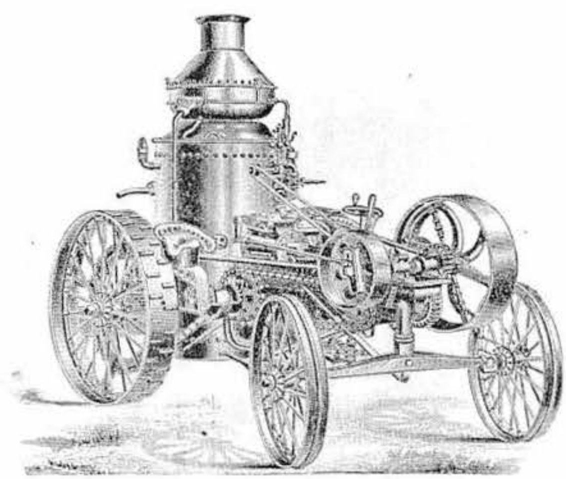


A 12 H.P. "Champion" improved steam traction fire-proof road locomotive was produced in 1898. The tank on which the engine was mounted held about four barrels of water. The traction was driven by a friction working inside of a drive pulley and transmitted by a pair of spur gears to a counter shaft and to the wheels by a crucible steel chain. It could be instantly thrown out and into gear while the engine was in motion.

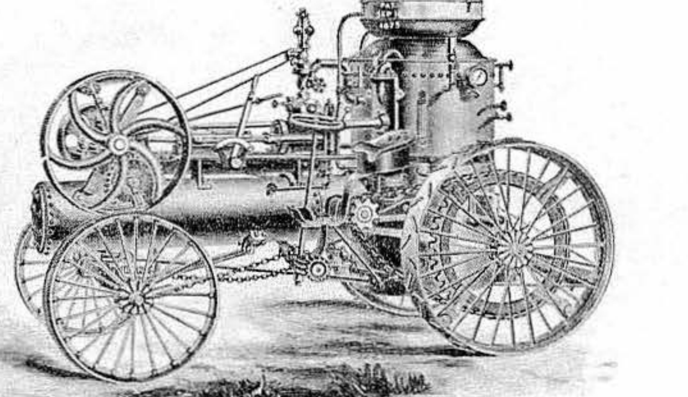
A 12 H.P. "Champion" improved friction steam traction engine was pictured in an 1898 D. June catalog. This engine was provided with the new reversible eccentric, which was operated by a lever convenient to the engineer. This engine could be taken up and down heavy grades with perfect safety. The driving wheels had 13-inch tires, and were provided with creepers which could be bolted on for muddy roads. It had no equal in pulling, especially on muddy roads.



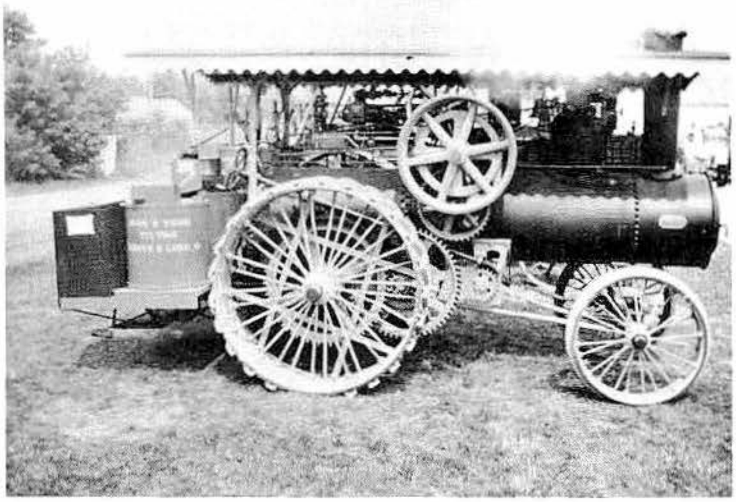
This is a 1904 model 12 H.P. D. June "Champion" improved friction steam traction engine. When in constant use, the boiler of this engine had to be blown out and thoroughly cleaned once a week.



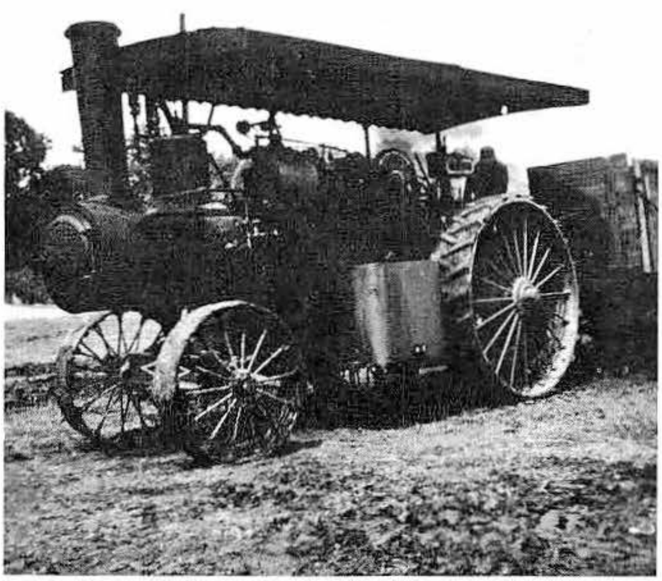
A 12 H.P. "Champion" improved friction steam traction engine was pictured in an 1898 D. June catalog. The boilers used in the Champion were of the best 60,000 lb. flange steel, with heads and fire-box made of best fire-box steel, and were made tight under a cold water pressure of 200 pounds per square inch before leaving the shop. The company gave a certificate to each purchaser, giving a full description of the boiler and the date of testing.



Keck - Gonnerman



This Keck-Gonnerman steam traction engine, built by Keck-Gonnerman Co. of Mount Vernon, Ind., is owned by V. O. Tilton & Son of Lima, Ohio. It appears at the Miami Valley Steam Threshers Assn. show at London, Ohio. This engine was built in 1901. The company was established in 1873, headed by John Keck, Louis H. Keck and Wm. Gonnerman.



This 19 H.P. Keck-Gonnerman engine, built in 1923, is owned by Frank Childers of Clarksville, Tenn. It is shown here pulling a wagon at the Tennesee-Kentucky Threshermen's Assn. show at Adams, Tenn. The Keck-Gonnermans were side mounted single cylinder traction engines, very simple and powerful.

Keck-Gonnerman steam thresher engines were built 16 mile south of Evansville, Indiana. Mr. Billie Keck and Mr. Gonner man were from Germany and were fine mechanics when the came to the U.S.A. They started a blacksmith shop and buil their first engine where the factory stands today.

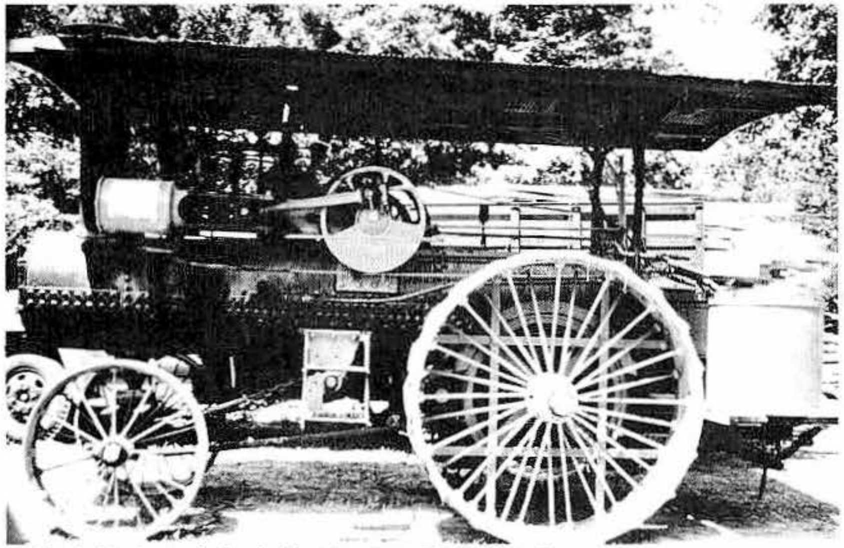
The company was established in 1873, headed by John Keck Louis H. Keck and Wm. Gonnerman for their lifetime. The stean traction engines, at first were side mounted single cylinder units very simple and powerful. These engines were well balanced anc had everything to make a good traction better. The Arnold re verse gear was used and was very positive and well liked; the fric tion clutch was positive and was one of the best designed to b found on any traction engine. Rocker grates, cross head pump and injector were used. Very reliable, this engine made friend whereever it went.

Then came the double cylinder Keck-Gonnerman, offered a both inside and rear geared models. These were also accepted fas by the trade. The gearing used was heavy; all engines had pump and injectors, friction clutch; in fact nothing was left out. Th later models had the new Miller reverse valve gears on the singl engines and the Gentry type on the double. A Keck-Gonnerma hitched to a good thresher would make its self known, and wa found busy from morning to dark during the threshing era.

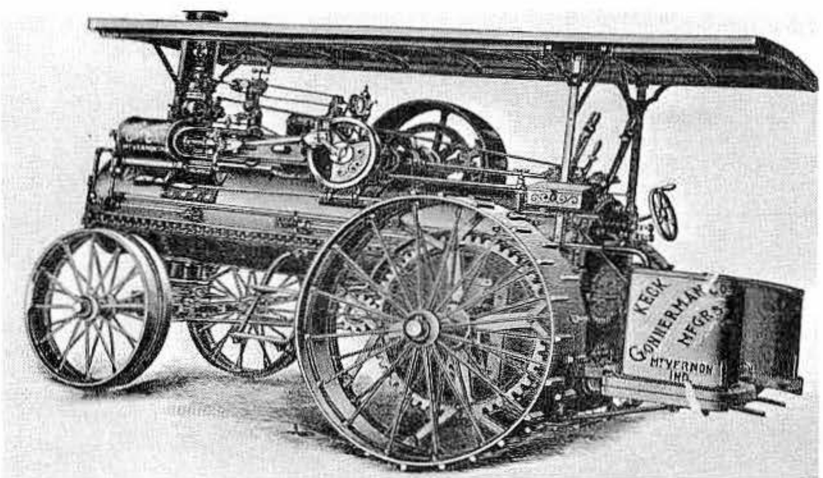
Keck-Gonnerman threshers were fast; grain savers and depen dable; equipped with self feeder, weigher and baggers, wind stackers, and a fifteen bar cylinder. With a good crew, the Keck Gonnerman was a hard one to beat during the threshing season. They were long lived and easy to keep up.

The Keck-Gonnerman Gas-Oil Tractors likewise were well constructed. The power was ample for the largest threshers. Some of these can be still found in good condition. The Bean & Pea Threshers were well liked. In the 20s and 30s, cow peas were a major crop in west Kentucky, southeast Missouri, and southern Illinois. The Keck-Gonnerman sawmills, likewise were heavily in demand in the 1900s to about 1925. Coal mining machinery was another unit built by Keck-Gonnerman. This old firm stayed in business longer than almost all others did. The company was incorporated in 1901.

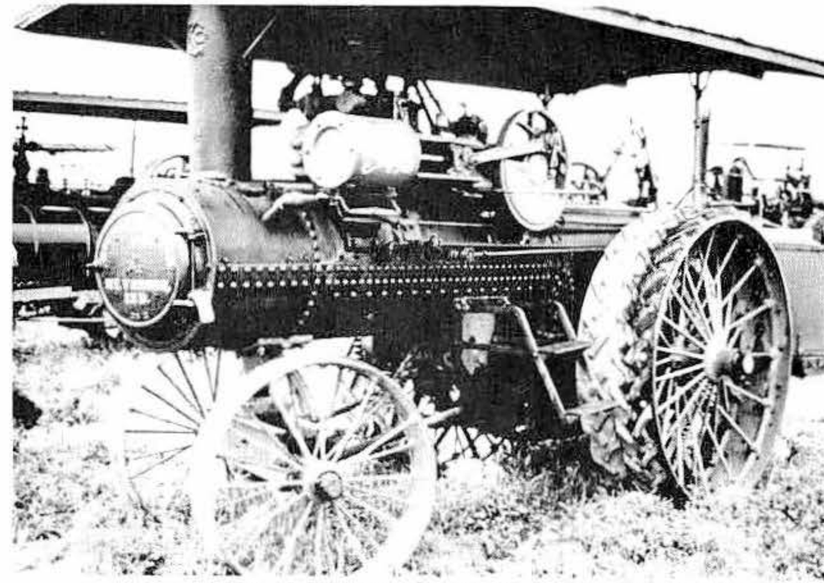
This is the flywheel side of a 1923 model 19 H.P. Keck-Gonnerman steam traction engine. This engine is owned by John Howard of New Philadelphia, Ill. It is on display at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa. Keck-Gonnerman also built threshers which were fast and dependable. These were equipped with self feeders, weighters and baggers, wind stackers, and a 15-bar cylinder. With a good crew, the Keck-Gonnerman was a hard one to beat during the threshing season, especially when using a Keck-Gonnerman steam traction engine.



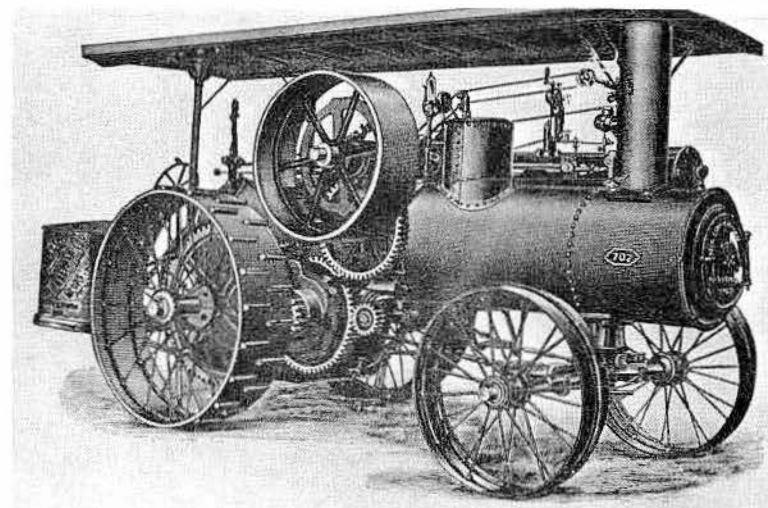
Parked in front of a load of lumber, this 19 H.P. Keck-Gonnerman steam traction engine, built in 1925, is owned by Paul C. Singer of Denton, Md. It appears at the Tuckahoe Steam & Gas Assn. show at Easton, Md. This engine is serial No. 1819. It has a 8¾-inch bore and 12-inch stroke; does 3 M.P.H. at 240 RPM; weighs 20,000 lbs., and cost $2,900 new.



This is the cylinder side of a Keck-Gonnerman steam traction engine. This engine used a front axle made of heavy square machinery steel. Oil pipes and oil holes were conveniently located for lubricating the gearing. The smokestack was cast iron, made in one piece, with an ornamental top extending above the roof of the cab. The cab or canopy top extended the full length and width of the boiler and platform, and was supported on a stiff iron frame.

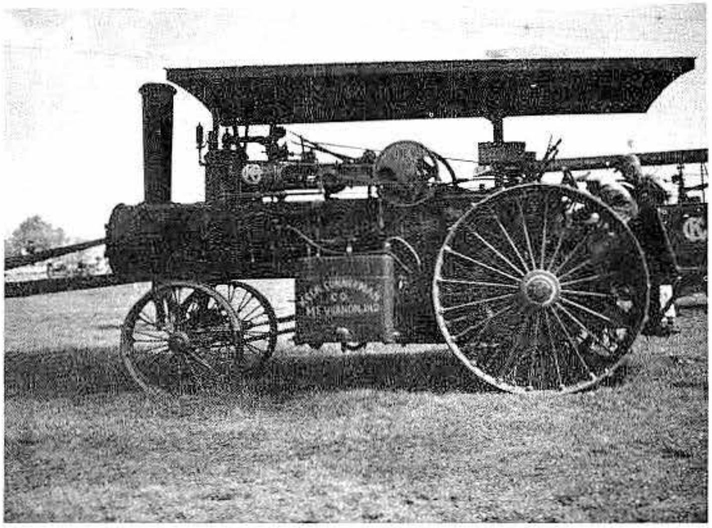


This 19 H.P. Keck-Gonnerman, built in 1919, was owned by Earl Marhanka of Dowagiac, Mich. This engine is a single cylinder, side mount forward.

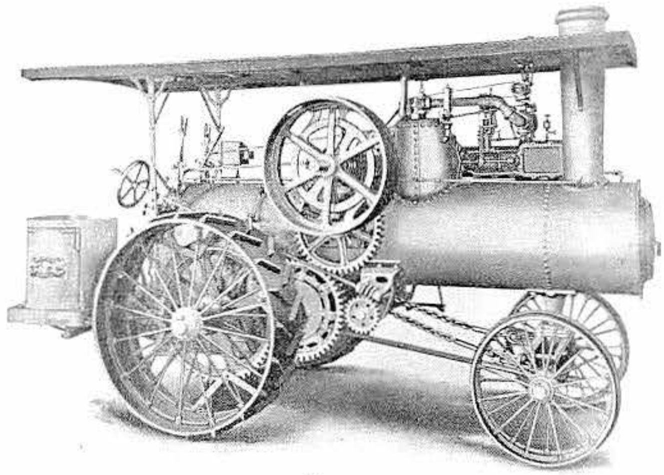


Very heavy gearing was evident on the flywheel side of the Keck-Gonnerman steam traction engine. The engine was made in 10, 13, 15, 16, 18 and 20 H.P. versions. These engines used the Giddings patent friction clutch. The gearing was made entirely from accurately milled cast iron patterns. The compensating gear was fitted with steel pinions. All gearing was provided with a means for lubrication and shields for protection from dust and sand. The traction wheels were cast iron hubs, with long bearings for axles, wrought iron spokes and broad cast iron faces.

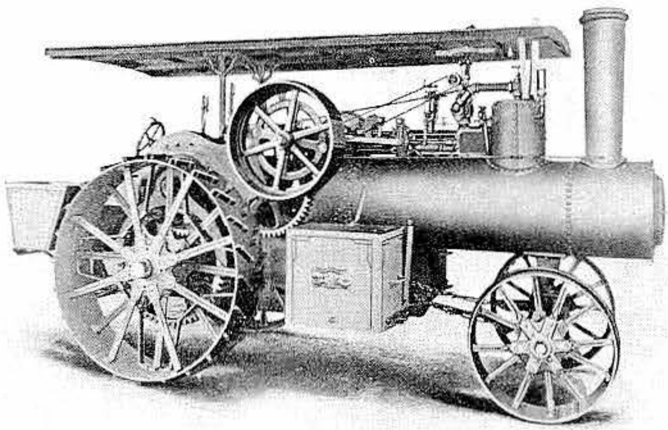
Keck - Gonnerman



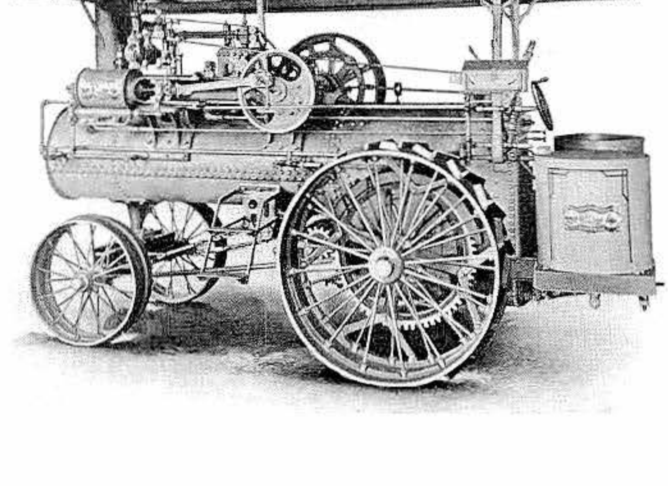
Running a belt is this 20 H.P. Keck-Gonnerman steam traction engine, built in 1922. This engine is owned by C. R. Fullerton & Son of Burgettstown, Pa., and is operating at the Tri-State Historical Steam Engine Assn. show at Hookstown, Pa.



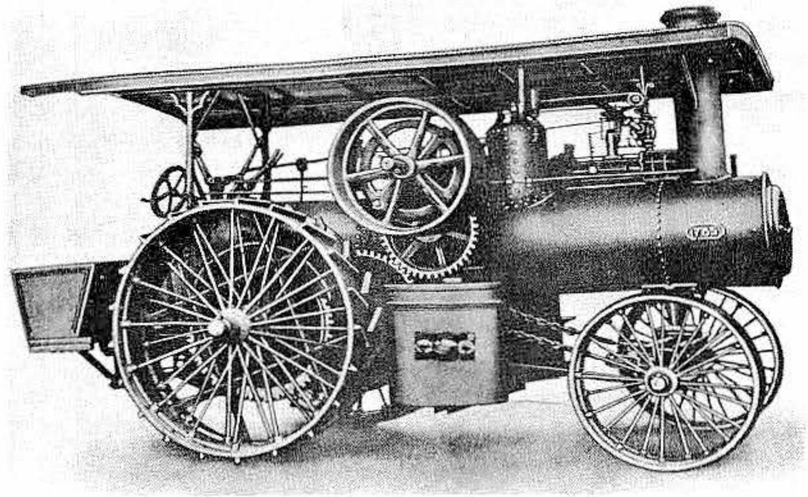
This is the flywheel side of the side-geared 19 or 22 H.P. Keck-Gonnerman steam traction engine of 1923 vintage. Since 1921, all Keck-Gonnermans were mounted on boilers built according to the A.S.M.E. specification, having 3/8-inch boiler shell, and a waist double butt strap riveted and made to stand 175 lbs. of working steam pressure.



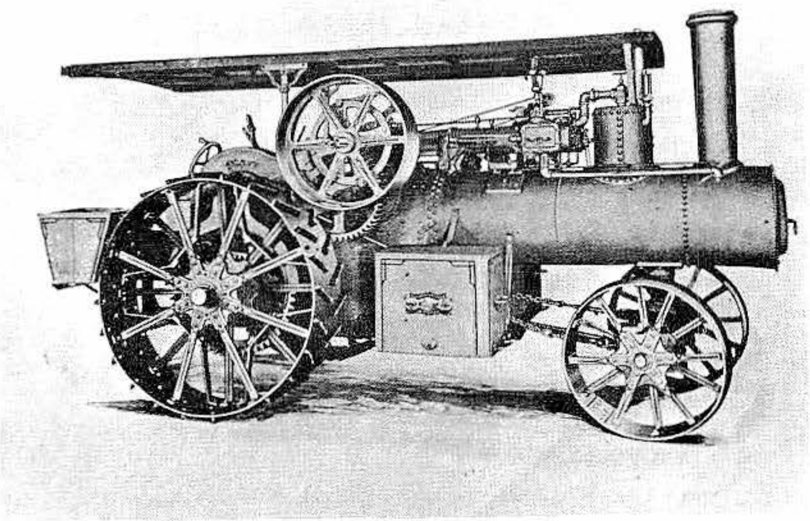
This is a 1923 model 19 or 22 H.P. Keck-Gonnerman single, rear-geared engine. It used the Miller reverse for single engine, with a variable cut off. All the engines were equipped with a very simple and accurate balance valve of K-G design.



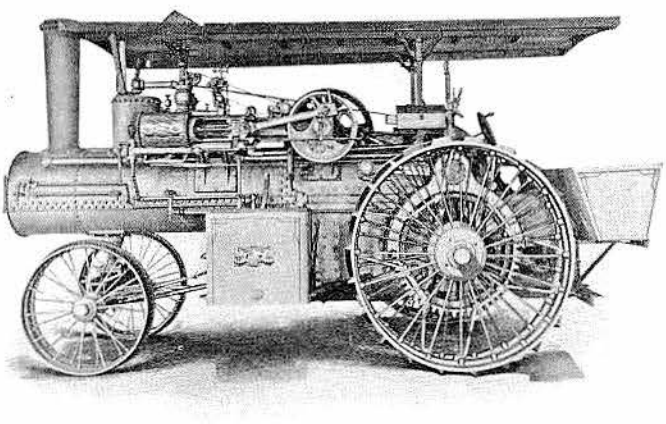
The 19 or 22 H.P. Keck-Gonnerman of 1923 had its cylinder mounted far forward. The engines used a single feed lubricator with the throttle valve, governor, slide valve and cylinder. The company said that it was the first to adopt this on traction engines.



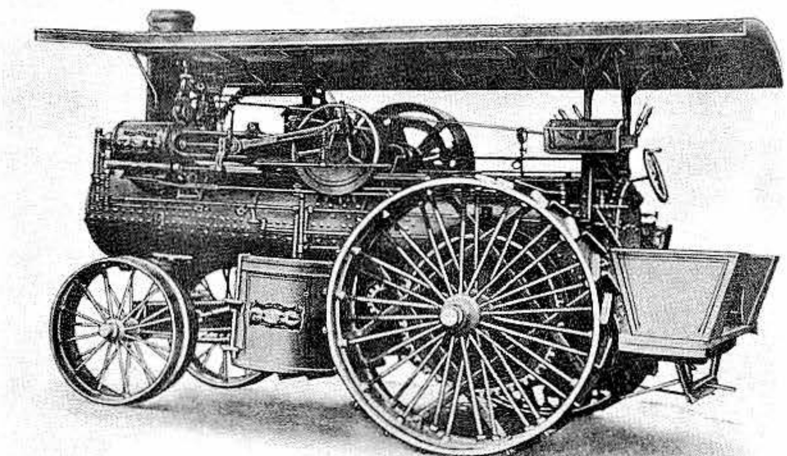
Looking very heavy is this 1926 model 19 or 22 H.P. Keck-Gonnerman single side-geared steam traction engine. Each traction engine was furnished with a force feed lubricator, center crank oiler, oil cups, governor, injector, pump, reversing device, cab, water tanks, jet pump, five feet of 1-inch suction hose for the injector, 12-feet of suction hose for the pump, strainers for the hose, one 14-inch combination wrench, three S wrenches, cold chisel, poker, scraper, flue cleaner, funnel for filling boiler, oil can, 18 inches each of $^5/_{16}$ and $^1/_2$-inch empire and hemp packing, iron tool box and spark arrester.



This is the 1926 model of the 19 or 22 H.P. Keck-Gonnerman double, rear-geared steam traction engine, as viewed from the flywheel side.

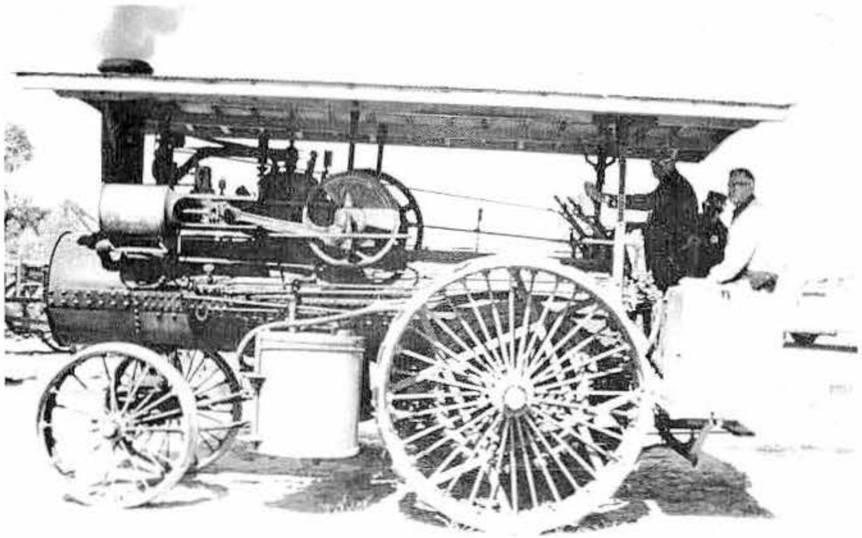


The 19 or 22 H.P. Keck-Gonnerman single, rear-geared steam traction engine was pictured in a 1923 Keck-Gonnerman Co. catalog. The shaking grates used on this engine were of heavy design.

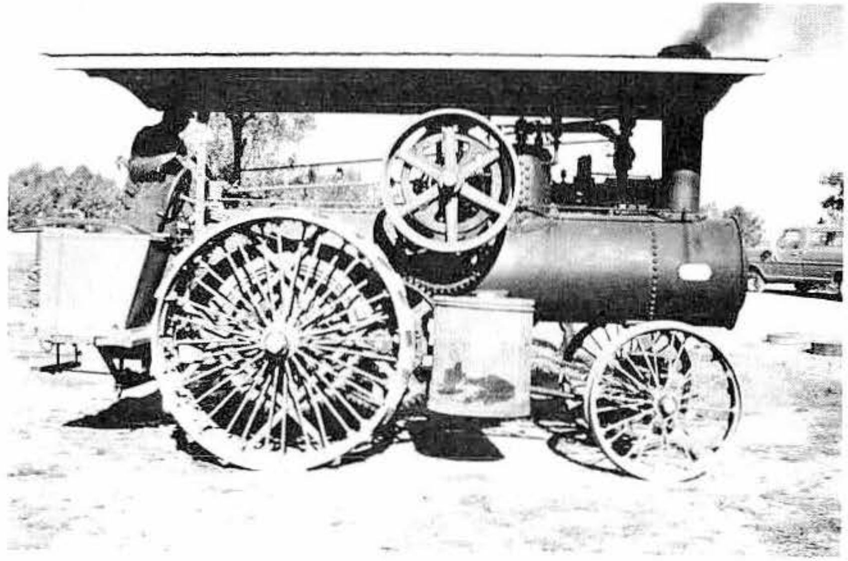


This is the cylinder side of the 1926 model 19 or 22 H.P. Keck-Gonnerman single side-geared steam traction engine. Note the tool box mounted on the canopy brace.

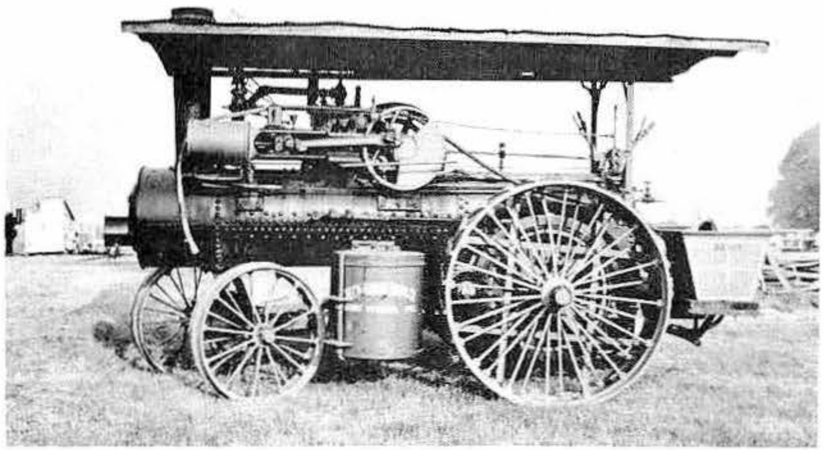
Keck - Gonnerman



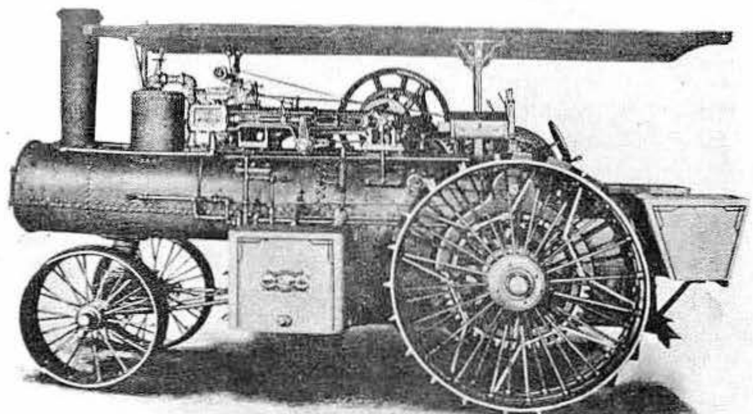
Clyde McAllister of Jeromesville, Ohio, demonstrates his engine at the Richland County Steam Threshers Assn. show. This is the cylinder side of the 1923 K-G.



This 22 H.P. Keck-Gonnerman steam traction engine, built in 1923, is owned by Clyde McAllister of Jeromesville, Ohio. It is participating in the Richland County Steam Threshers Assn. show at Mansfield, Ohio.



This 22 H.P. Keck-Gonnerman steam traction engine, built in 1916, is owned by Melvin Lugten of Hamilton, Mich. It appears at the Michigan Steam Engine & Threshers show at Mason, Mich.



The left side of the 1926 model 19 or 22 H.P. Keck-Gonnerman double, rear-geared steam traction engine shows how the cylinders were mounted directly on top of the boiler, immediately behind the steam dome.

O. S. Kelly Mfg. Co.

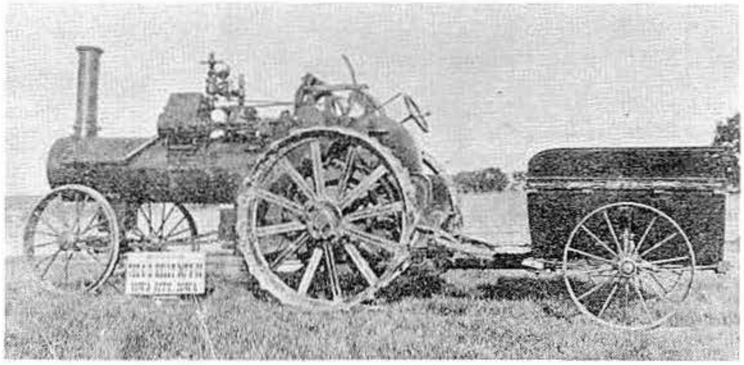
Oliver Smith Kelly was president of the O. S. Kelly Mfg. Co., of Springfield, Ohio, and connected with the O. S. Kelly Western Mfg. Co., of Iowa City, Iowa.

Mr. Kelly was born in 1824 and was an orphan at the age of one year. At the age of 14, he began making his own living on the farm. At the age of 17, he served one year as apprentice at the carpenter trade and a year later began work as a contractor. In 1857, he became a member of the firm of Whitley, Fasseler & Kelly, manufacturing mowers and reapers. O. S. Kelly became identified with the thresher business in 1882. The old thresher factory of Rinehart, Ballard and Company was acquired by O. S. Kelly and was organized under the name of Springfield Engine and Thresher Co., and afterwards the O. S. Kelly Company.

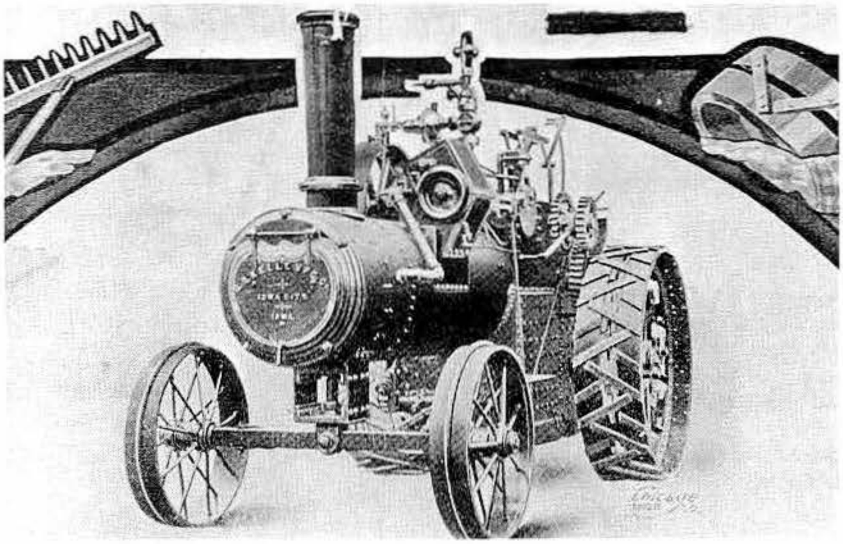
The O. S. Kelly steam traction engine used boilers without a seam. Those long steel sheets cost money, but they made the best boilers, so they said. The deep fire box had slanting sides and a sloping crown sheet stayed every 4½ inches with 7/8-inch stay bolts.

The grates were deep and heavy and laid to give the best results in using coal or wood. If the engineer wanted weather protection, he could get a neat and substantial cab, full or three quarter length, at an additional price.

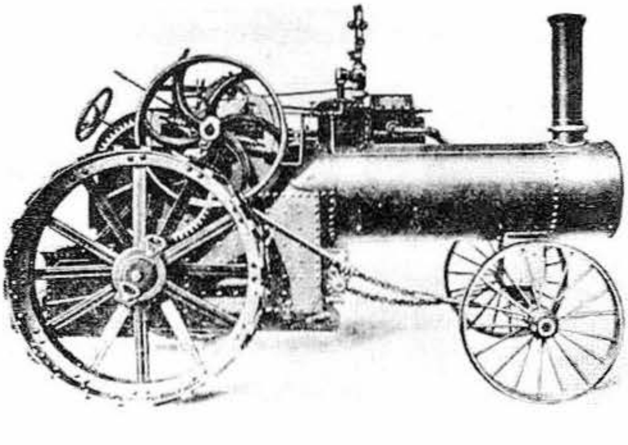
The O. S. Kelly Co. made the following: Steam traction engines, cable plowing steam traction engines; steel water tanks, and separators.



A 12 H.P. O. S. Kelly steam traction engine is shown with a Fuller tender attached. This was a luxury, pure and simple, and one that could be appreciated only by those who had seen or used it. This is a 1902 engine.

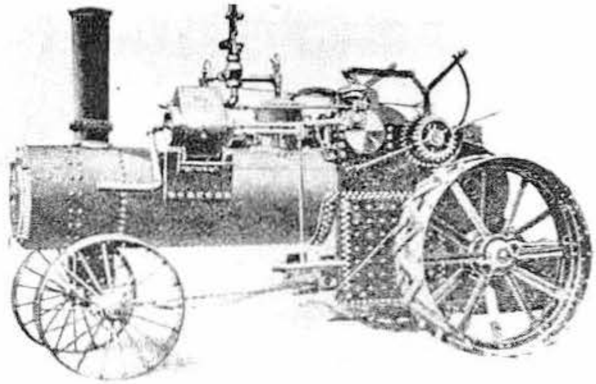


The 12 or 15 H.P. O. S. Kelly steam traction engine was built in 1902 by O. S. Kelly Co. of Springfield, Ohio. Oliver Smith Kelly was president of the O. S. Kelly Mfg. Co., and was connected with the O. S. Kelly Western Mfg. Co. of Iowa City, Iowa. This steam traction used a boiler without a seam. A deep fire-box with slanting sides and sloping crown sheet was stayed every 4½ inches with ⅞-inch stay bolts.

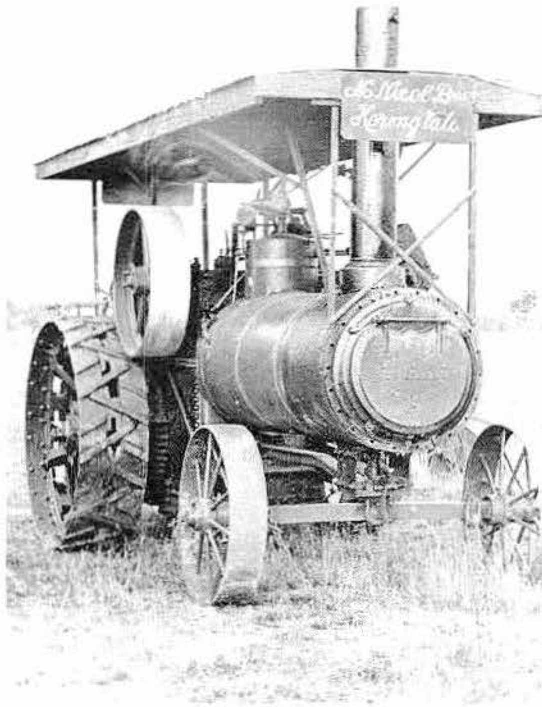


A 15 H.P. O. S. Kelly steam traction engine was pictured in a 1902 O. S. Kelly Mfg. Co. catalog. The Kelly transmitted power from the engine to the compensating gear through a train of three gear wheels. The pinion and spur wheel had 2¾-inch faces, the bull pinion had a 6¾-inch face.

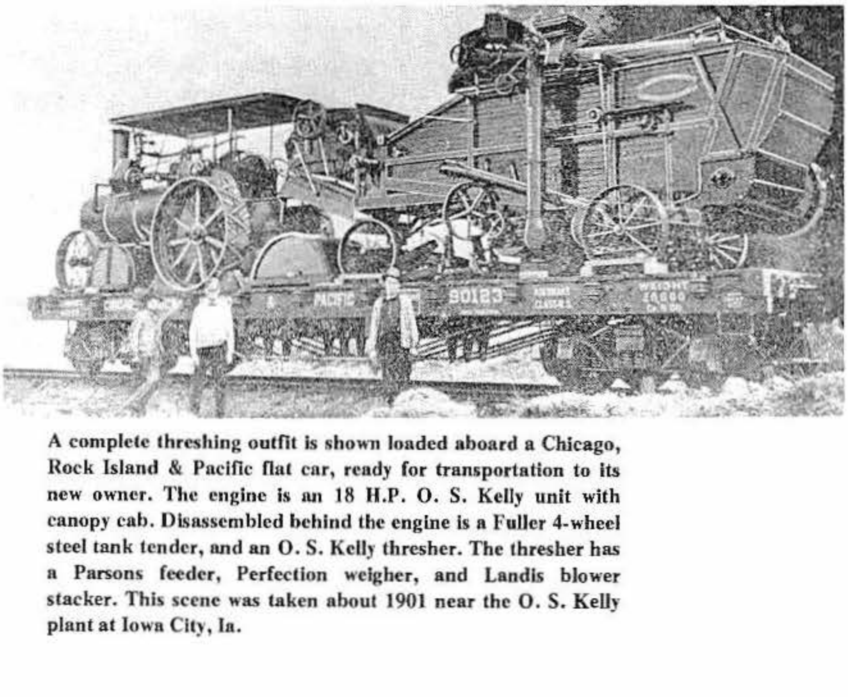
O. S. Kelly Mfg. Co.



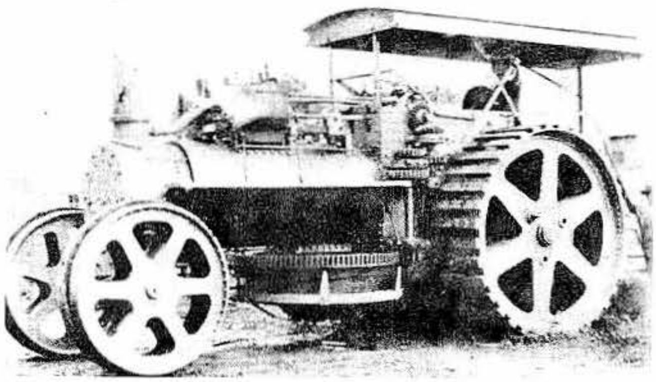
This is a 1902 model 18 H.P. O. S. Kelly steam traction engine. This engine's grates were deep and heavy, and could use coal or wood. This engine had a heavy double speed gear which necessitated one extra countershaft and one extra pinion and spur wheel.



Living far from the place of its birth is this 18 H.P. O. S. Kelly steam traction engine, built in 1906. This engine is owned by Jim McNicol of Manangatang, Australia, and is on display by the Lake Goldsmith Steam Engine Preservation Society of Australia. This O. S. Kelly, engine No. 2061, was sold by the agents, Cliff & Bunting, to R. I. Argyle, of Kyneton. The McNicol Bros., of Korong Vale, used this machine on various types of work after acquiring it in 1909. Threshing, chaffcutting, pile driving, and saw milling were a few of the tasks this engine performed. The O. S. Kelly Co. made cable plowing steam traction engines also. The Lake Goldsmith Steam Engine Preservation Society, founded in 1962, exists in order to preserve for posterity examples of engineering arts, crafts and trades, and to bring together many people with like interests who feel they have something of value to pass on to later generations. The Society has never sought or received government grants to carry out its works and relies entirely on any surplus from its proceeds to finance building of amenities, etc. From a local body the Society has progressed to a position where members are to be found the length and breadth of Australia. The one thing they have in common is respect and enthusiasm for the workmanship and ability of their forefathers.



A complete threshing outfit is shown loaded aboard a Chicago, Rock Island & Pacific flat car, ready for transportation to its new owner. The engine is an 18 H.P. O. S. Kelly unit with canopy cab. Disassembled behind the engine is a Fuller 4-wheel steel tank tender, and an O. S. Kelly thresher. The thresher has a Parsons feeder, Perfection weigher, and Landis blower stacker. This scene was taken about 1901 near the O. S. Kelly plant at Iowa City, Ia.



O.S. Kelly in 1905 produced a few of these cable plowing engines. But cable plowing was not adapted to the large grain fields of western North America, where the length of the furrow was usually measured in half-miles rather than in rods. There the cable plows, with their short strings of cable, were grossly inadequate.

Kitten

Mr. Kitten was born in Prussia in 1840, the son of a wooden shoemaker. When he was 10, he moved with his family to this country where they settled in a promising Indiana farming area near Ferdinand. He helped his father on the farm until he was 19, then for six years he worked as a carpenter. It was at the end of this period that the name Kitten began to spread in popularity.

Joseph Kitten was the founder of the Ferdinand Iron Works of Ferdinand, Indiana. When orders for Kitten threshers and steam traction engines began to overcrowd the second floor of the homestead, Kitten constructed a two-story factory on the property adjoining his home.

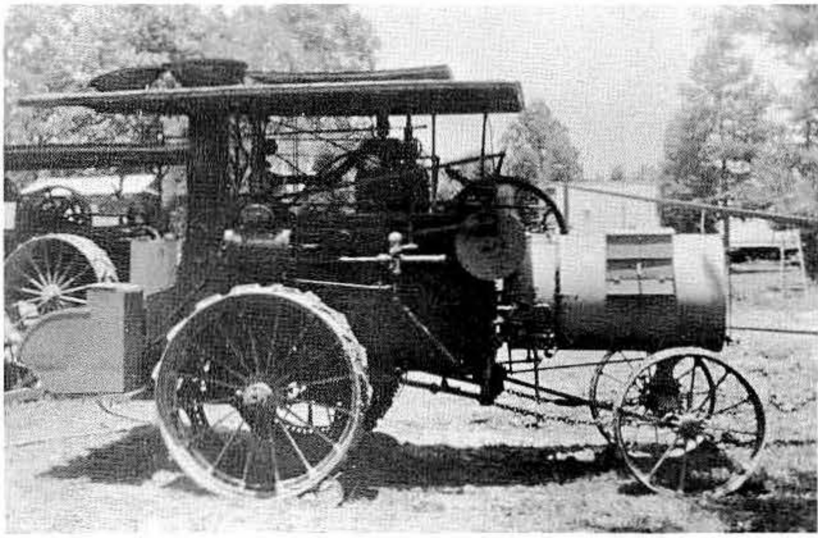
Mr. Kitten started building engines around 1880. He first used an upright boiler, but then went to the marine type boiler which was horse drawn. The first steam traction engines were of high road speed, and would do about 6 to 7 mph when wide open. There were 246 of these later type steam traction engines built. The last engine was built in 1940 and sold to Mr. Kueken in June 1942 for $2,550. It was a 25 H.P. engine and he used it in his sawmill.

Kitten would give his boilers a cold water test when finished. They would only give it 5 to 10 pounds more on water than steam as they said cold water was so hard on a boiler. Sometimes they would run it up to 40 or 50 lbs. more.

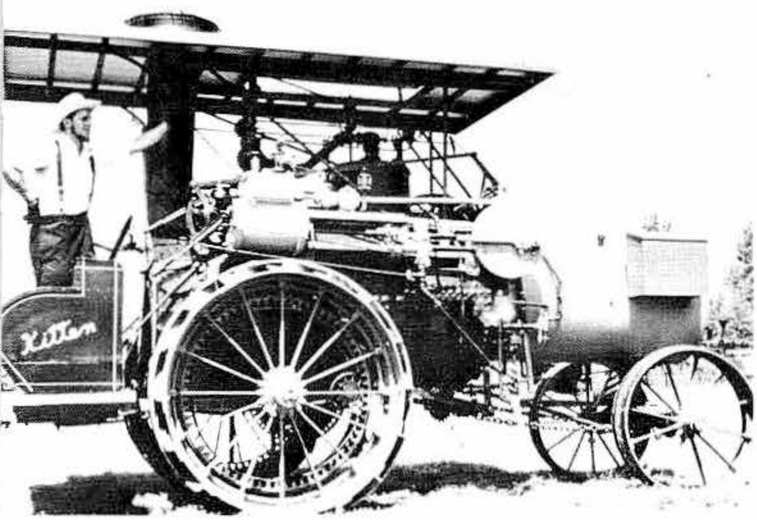
The weight of the engine entirely equipped with water, tools, coal and jacks was 17,025 lbs. All the patents of the Kitten machinery were those of Joseph Kitten the founder of the factory.

The Kitten factory also manufactured complete sawmill outfits and separators. The separators were all wood, 36 in. cylinder and 60 inch, separator belt driven blower. The separators sold for $1,800 complete with a Ruth feeder and Hart weigher. The factory still has some repair parts for the engines and separators. Mr. Kitten died around 1920. The factory now belongs to Sterling Bros., formerly of Rockport, Ill. At last report, they made truck beds and did general repair work, plumbing and heating.

A real king of the hill is this 24 H.P. Kitten steam traction engine, built in 1915, and owned by Walter Knapp of Monroe, Mich. It is showing off at the National Threshers Assn. show at Wauseon, Ohio. Joseph Kitten started building engines around 1880. He first used an upright boiler then went to the marine type boiler on a horse drawn rig. The first steam traction engines were of high road speed.

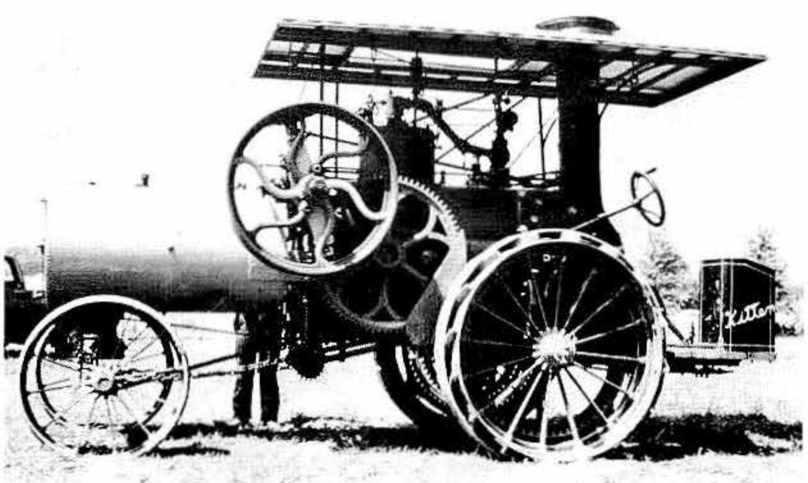


This 24 H.P. Kitten steam traction engine was built by the Ferdinand Foundry Co., of Ferdinand, Ind., in 1925. It is owned by Robert Lyerly of Mocksville, N.C., and is here running a belt at the Mocksville Threshing Reunion. Joseph Kitten was the founder of the Ferdinand Iron Works.



Paul B. Stolzfoos of Leola, Pa., operates his 24 H.P. Kitten steam traction engine built in 1925. This engine is at the Rough and Tumble Engineers Historical Assn. show at Kinzer, Pa. Kitten would give his boilers a cold water test when finished, but would only give 5 to 10 pounds more on water than steam as he said cold water was too hard on a boiler.

This is the flywheel side of the 24 H.P. Kitten owned by Paul B. Stolzfoos of Leola, Pa. Paul's engine is No. 214. The weight of this machine, fully loaded with water, tools, and coal, is 17,025 lbs. The Kittens were rather unusual in that the cylinder was mounted on the right, and the flywheel/belt pulley was on the left. It is believed that all Kittens were of the return flue design.

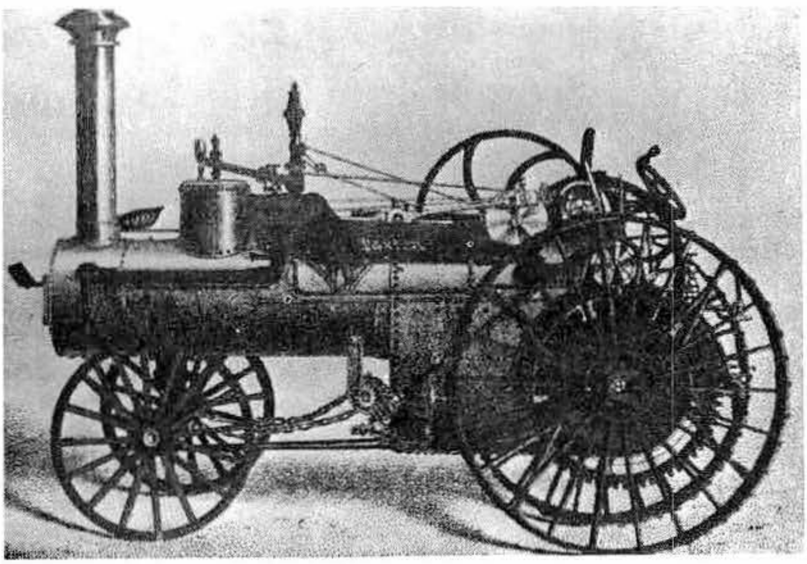


Koppes & Brenneman

In January 1879, the firm of Koppes & Brenneman was organized, consisting of W. M. Koppes and Christian Brenneman, who manufactured the Champion thresher machines. The shops occupied were built by Freer & Co., and consisted of a fine two-story brick building, 40 x 60 feet, and an engine house, 20 x 30 feet, to which the firm made an addition of 40 x 60 feet. Power was furnished by an engine of 20 horse power. Fifteen men were employed. Sales extended all over the United States. W. M. Koppes was a native of Medina County, Ohio. He went to Orrville, Ohio, in 1875.

Christian Brenneman was native of Lancaster, Pa., but became a citizen of Ohio. He went to Ohio in 1836 when the present site of Orrville was a wilderness. He was one of Wayne County's pioneers.

This company manufactured the Champion combine, grain threshers, and clover hullers, Paxton steam traction engine, farm engines, and sawmills.



A "Paxton" steam traction engine built by W. M. Koppes & Co., of Orrville, Ohio. This picture was taken from a Koppes Co. catalog. In January 1879, the firm of Koppes & Brenneman was organized, consisting of W. M. Koppes and Christian Brenneman, who manufactured the "Champion" combined grain threshers and clover hullers, "Paxton" steam traction engine, farm engines and sawmills. There was no relationship between this company and Harrisburg Car Mfg. Co. of Harrisburg, Pa., which built the "Paxton" portable steam engine.

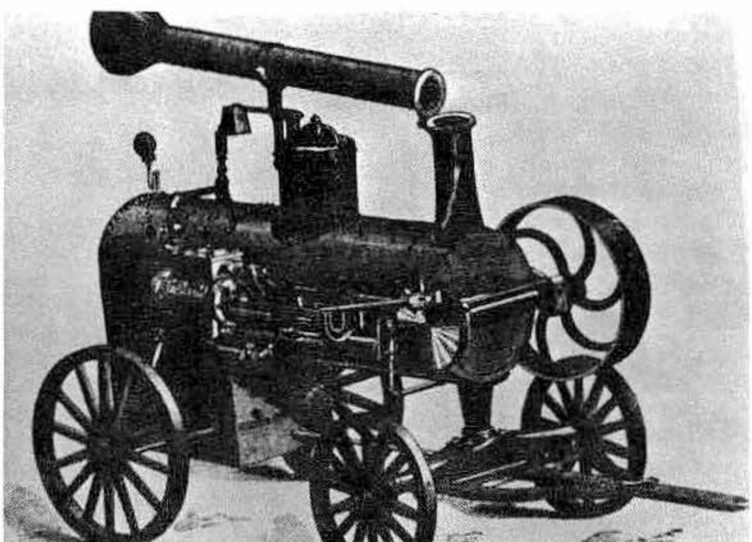
Lane & Bodley Co.

The Lane & Bodley Co. was established in 1851 in Cincinnati, Ohio. It was incorporated as a stock company in 1876. The capital stock was $345,000, which, however, was less than the real value of the plant and business, which was over half a million. The President was H. M. Lane, and the Secretary and Treasurer Charles F. Thompson. In 1868 J. T. Bodley, one of the principals, died, after an honorable and brilliant career. The extensive works of the company went on, and enlargements were made which would employ 600 men, the great majority being first-class and well paid mechanics.

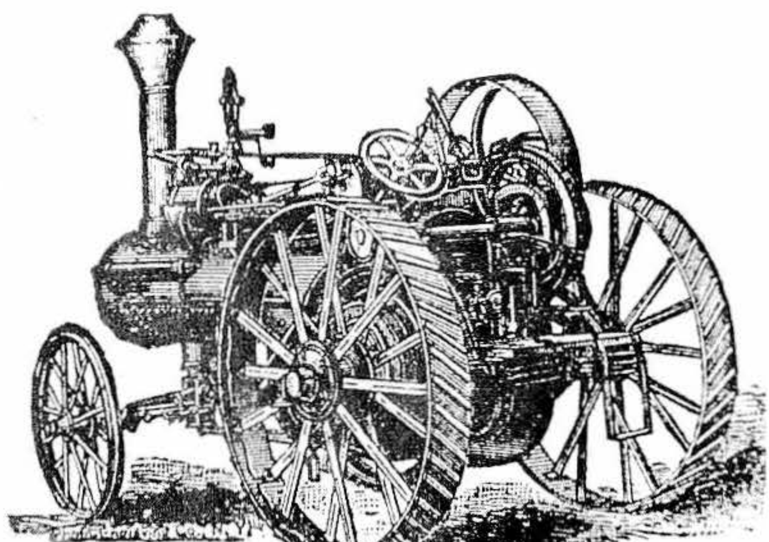
The company did a general business as founders and machinists, manufactured steam traction engines, steam engines, including Corliss automatic cut-off engines, complete circular sawmill outfits, steam and hydraulic power and safety elevators, boilers and the like.

The company, during the latter part of 1890, extended and remodeled a portion of their extensive works on the river bank and supplied them with all the latest improvements and labor saving appliances.

Their work was known all over the United States, and was well distributed over the American continent as well. They had for years shipped sawmills and other machinery to South and Central America, Australia, India, and other countries, and the engine furnishing power in the Imperial University, Tokyo, Japan, was one of their makes.



The Lane & Bodley steam portable engine was pictured in the Scientific Press in 1871. The engine was built by Lane & Bodley Co., of Cincinnati, Ohio. It was of the locomotive pattern, with large fire-box and great steaming capacity. There was ample water and steam room. The large steam dome was made of wrought iron, in the top of which was a man-hole of size sufficient to admit free access to the interior. The engine was attached to a bed plate accurately fitted and securely bolted to the surface of the boiler, at its center.

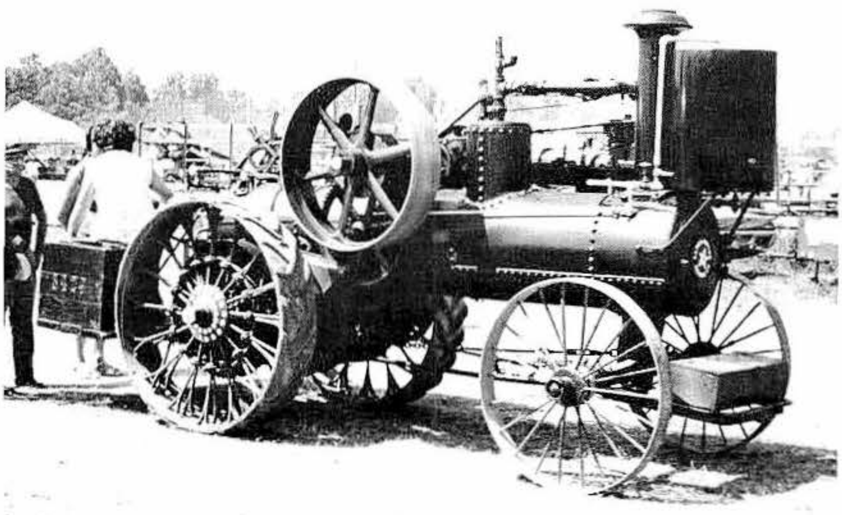


The Lane & Bodley steam traction engine was built by Lane & Bodley Co., of Cincinnati, Ohio. Lane & Bodley Co., was established in 1851 and was incorporated as a stock company in 1876. The company was started by H. M. Lane and J. T. Bodley. Very little is known about these engines, and it is assumed that very few were built.

Lang & Button

In 1868 James Reynolds and John B. Lang established a agricultural equipment factory in a machine shop on Tioga Street in Ithaca, N.Y. The plant subsequently moved to Green Street in August, 1870. On October 31, 1891, Mr. Reynolds died. Then in 1902, Ernest D. Button joined the firm, which became Lang and Button.

Steam engines, portable sawmills, land rollers, plows, horse hoes and cultivators, etc., constitute the leading articles made by the firm. In the 20th century, steam traction engines were its principal products, but in 1921 their manufacture was discontinued because of the increasing use of gasoline tractor.



This 12 H.P. Lang & Button steam traction engine was built by Lang & Button Co., of Ithaca, N.Y., in 1909. This engine is owned by Lester Norris of Marcellus, N.Y., and appears at the New York Steam Engine Assn. show at Canandaigua, N.Y. This Lang & Button engine is believed to be the only one left today. In 1868 James Reynolds and John B. Lang established a agricultural equipment factory in a machine shop on Tioga St. in Ithaca. On October 31, 1891, James Reynolds died. Then, in 1902, Ernest D. Button joined the firm, which became Lang & Button.

This is the cylinder side of the 1909 model 12 H.P. Lang & Button steam engine owned by Lester Norris of Marcellus, N.Y. Present day steam owners and buffs are paying tribute to the pioneers who haunted the junk yards for abandoned, rusty steam traction engines. Some of them found the last of a kind. Steam traction engines were once the principal products of the Lang & Button Co. But in 1921 their manufacture was discontinued because of the increasing use of gasoline tractors.

A huge water tank dominates a front view of the little 12 H.P. Lang & Button engine owned by Lester Norris. An unusual feature of this engine is the large tool box mounted on the front axle. Despite rather significant production of Lang & Button engines, this is the only example known to exist. Even more rare, seemingly, are any photographs, illustrations, or technical information on these machines. Apparently all of this material was lost since the company discontinued manufacturing these engines in 1921.

Lansing Iron & Engine Works

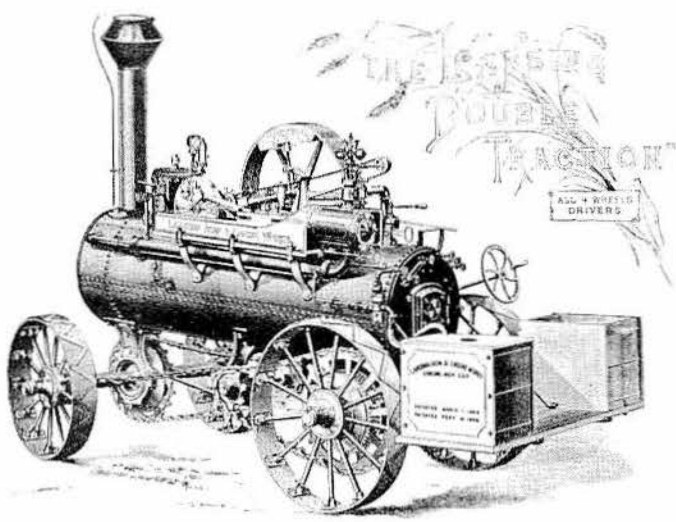
According to Samuel Durant in his History of Ingham and Eaton Counties: "The buildings at present occupied by Jarvis, Barnes & Co., were erected in 1872 by the Lansing Iron Company, of which W. S. George was President . . . A foundry and machine business was commenced by the company in the fall of 1872, and continued until March, 1876, when it was closed.

The property was turned over to W. S. George and O. M. Barnes, who settled up the business. George sold to Barnes in 1879, and from April, 1879, to April, 1880, the works were rented and operated by Cady, Glassbrook & Co. At the last-mentioned date Joseph Lugen and Samuel E. Jarvis purchased a half interest of Mr. Barnes, since which the firm has been Jarvis, Barnes & Co."

Frank N. Turner in Volume No. 3 Ingham County, of Historic Michigan says that "the Lansing Iron & Engine Works was incorporated in 1885."

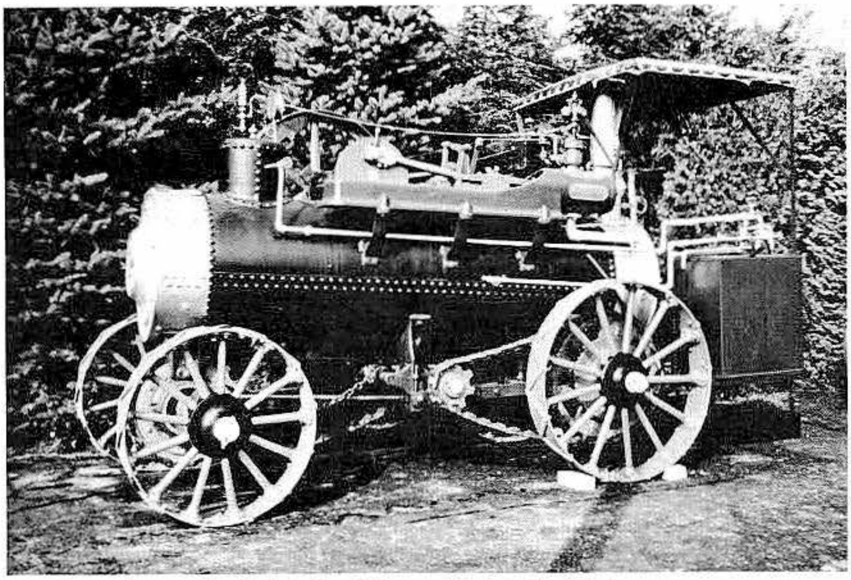
However, in the 1883 Lansing City Directory there is a listing and large ad for the Lansing Iron and Engine Works—Jarvis, Barnes & Co., Proprietor.

This company is also listed in the 1891 and 1895 Directories, but not in the 1898 Directory.

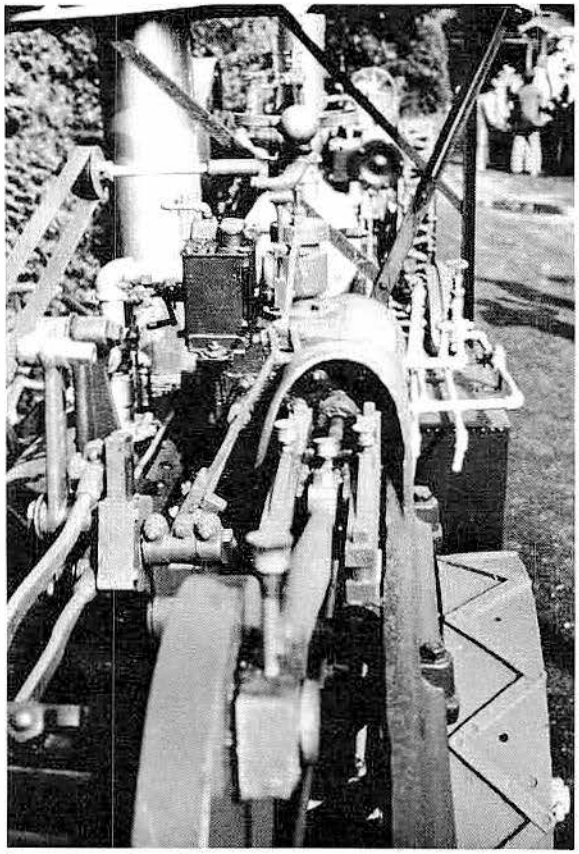


Quite modern for its era is this 1888 model of the 12 H.P. Lansing 4-wheel-drive steam traction engine. These machines were built by the Lansing Iron Works of Lansing, Mich. A rather uncomplicated system of gears, sprockets and chains allowed all four wheels to have driving traction.

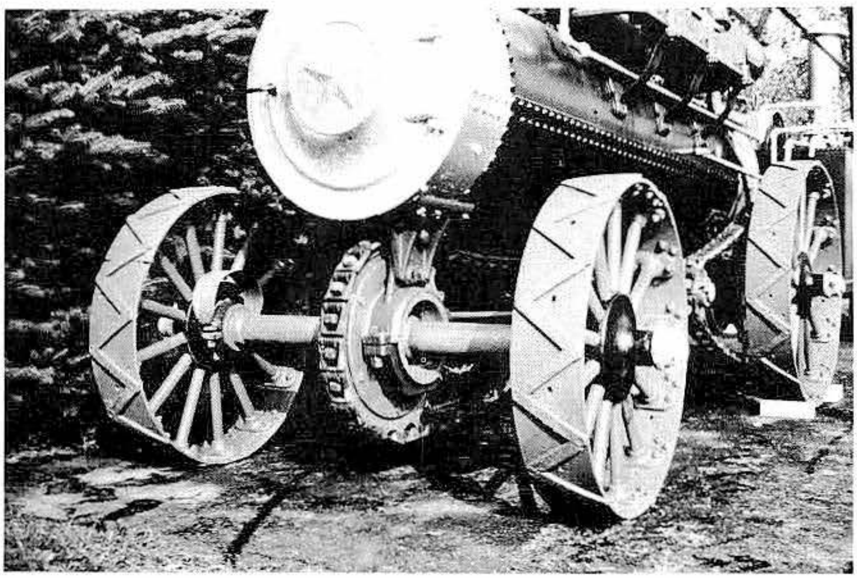
Lansing Iron & Engine Works



Formerly owned by the late Rev. Ritzman, this is believed to be the only existing example of a Lansing 4-wheel-drive steam traction engine. This 12 H.P. model was built in 1897. This is return flue engine, while the 1888 model was a straight boiler type.



An engineer of an 1897 Lansing engine would have had this view over the cylinder of his 12 H.P. machine. Note the simple threaded cup lubricators on all bearings. These lubricators consisted of a cup with an external thread and a cover with an internal thread. Both the cup and cover were filled to capacity with grease or "hard oil." As the bearings used this grease, the engineer could supply more lubricant to the bearing surface simply by turning down the cover and thus squeezing more grease from the cup onto the bearing. On these engines, the object of the lubricant was not only to reduce friction, but also to carry away whatever excess heat was generated by the friction. The grease reduced friction by forming a cushion between the bearing surfaces, thus keeping the metal apart. It also dissipated the heat by melting and running from the bearing, or by vaporizing and carrying away the heat in the form of vaporized oil. Because of its heat dissipating requirements, a grease suitable for steam engines was generally unsuited to the much faster moving gasoline engines. Steam engine oil or grease is what is known as a compounded oil, made by mixing either animal or vegetable oil with conventional mineral oil.



This is the front-wheel-drive system used on the 12 H.P. Lansing of 1897. The solid front axle could pivot within the large sprocket, thus allowing the front wheels to steer in a conventional manner even while under power. However, on a turn it is obvious that the inner wheel would have to spin while the outer wheel would drag, to compensate for the difference in the radius of the turn. This engine, the only known example of a Lansing, was owned by the late Rev. Elmer Ritzman, a Methodist minister for 42 years, and founder and publisher of "Iron-Man Album Magazine," and "Gas Engine Magazine." The engine is now residing in North Carolina.

Leader (Marion Mfg. Co.)

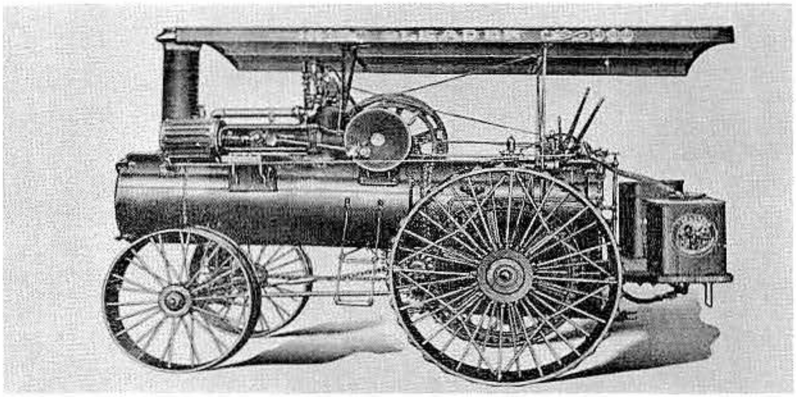
The Leader steam traction engine was manufactured by the Marion Mfg. Co., of Marion, Ohio, founded in 1886.

The Leader steam traction engine used an extra long smoke box, which contained a baffle plate over flues. The stack was positioned to prevent throwing fire. The steam dome was centrally located to prevent priming in going up or downhill. A large compensating gear, gave the engine a powerful leverage on the drive wheels. The large axle, skein and hub were properly braced and spoked wheels were designed for great strength.

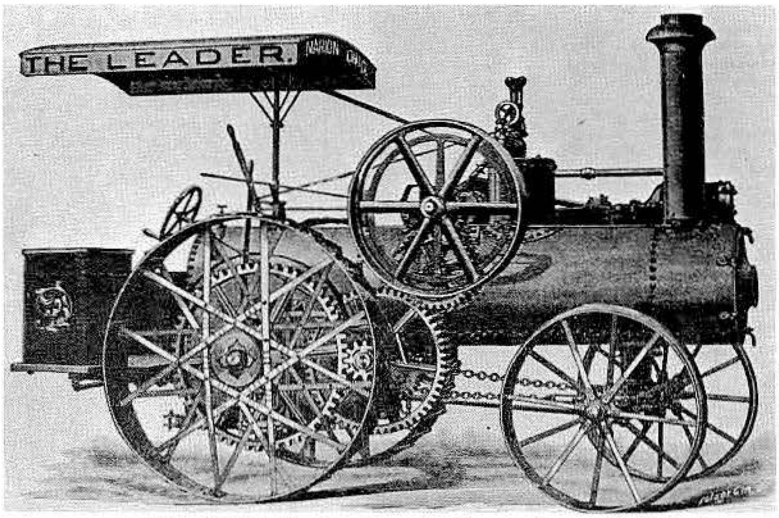
The front axle was mounted on an extra strong pedestal, bracketed to the water space of the boiler, and not to the smoke box as some engines were at that time. This gave the engine a perfect poise in its mounting, and made it exceedingly easy to handle and control on the road, so they said.

For the convenience of operating for the engineer, everything was in easy reach—such as the controlling rods for the cross head pump, reversing gear, throttle, friction clutch, water gauges and the injector. The fly wheel, being on the same side as the steering wheel, made it easy to line up the steam traction engine for belt work. The boiler was mounted high so as to clear any obstructions in the roadway. The drive wheels were 74 inches high, and from 18 H.P. up the drive wheels were made with high double oblique cleats. Their engine had a very strong foot board and platform, on which was mounted two large water tanks, connected underneath, so that in filling one tank the other was filled at the same time through the connecting pipe.

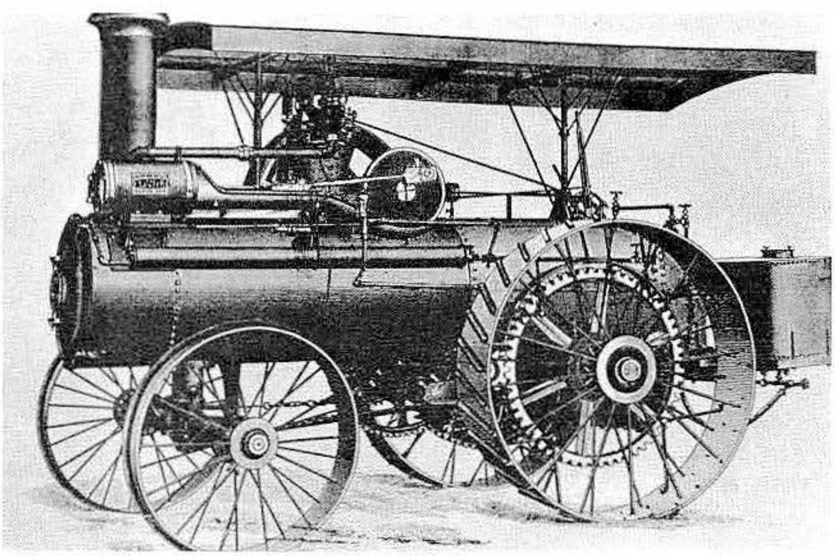
The Marion Mfg. Co. made the following: steam traction engines; steam portables; the Leader skid steam engine; the Leader junior separator, and sawmill machinery. They also made a 10 ton steam roller.



This 12 and 16 H.P. Leader steam traction engine was built in 1906. This was a regular coal burning engine. It was best adapted to the central states and rough and hilly parts of the country where small and medium sized threshers were used.

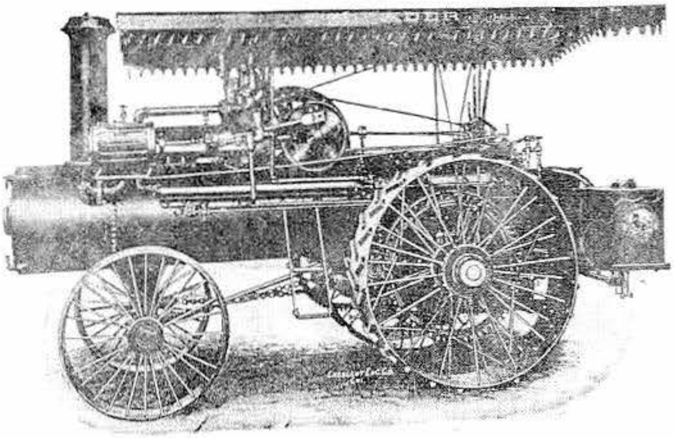


This 12 H.P. Leader steam traction engine was built by the Marion Mfg. Co., of Marion, Ohio, in 1895. The engine's boiler was of very best homogeneous boiler steel, and was provided with all safety appliances. The boilers were of the locomotive pattern, by which the most heating surface and the most water space were secured within certain limits. The longitudinal seams were double riveted, and all flat surfaces were thoroughly stayed and braced. Numerous hand holes made cleaning easy.

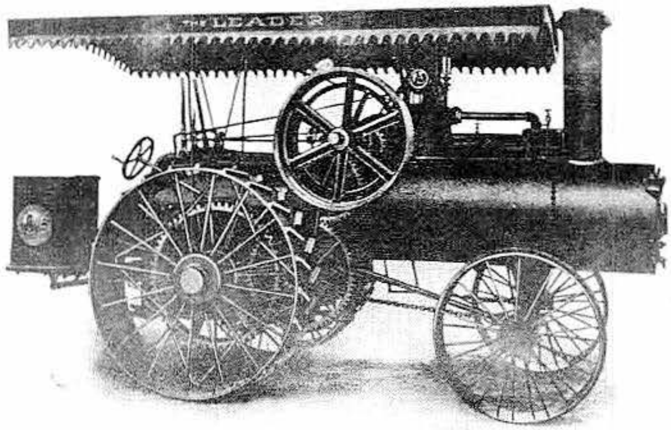


The 16 H.P. Leader steam traction engine was pictured in a 1895 Marion Mfg. Co., catalog. This engine's water tanks were on either end of the footboard and connected, so that filling one filled both. They were made of sheet steel, had rounded corners, and were very neat.

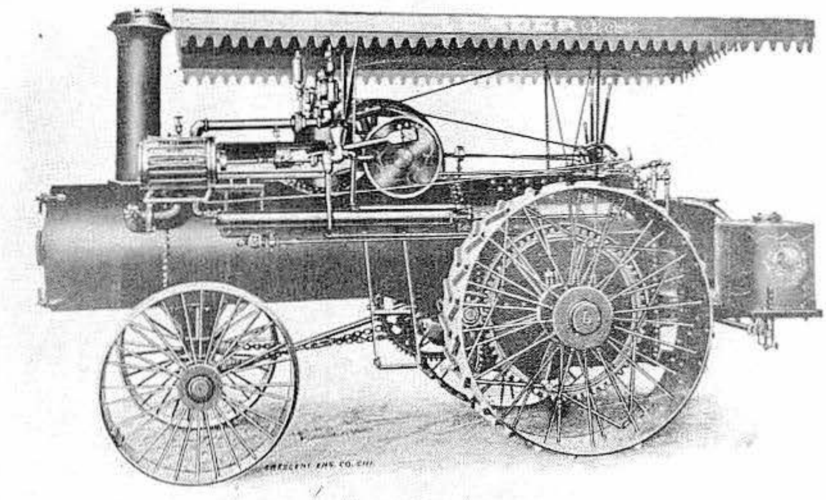
Leader (Marion Mfg. Co.)



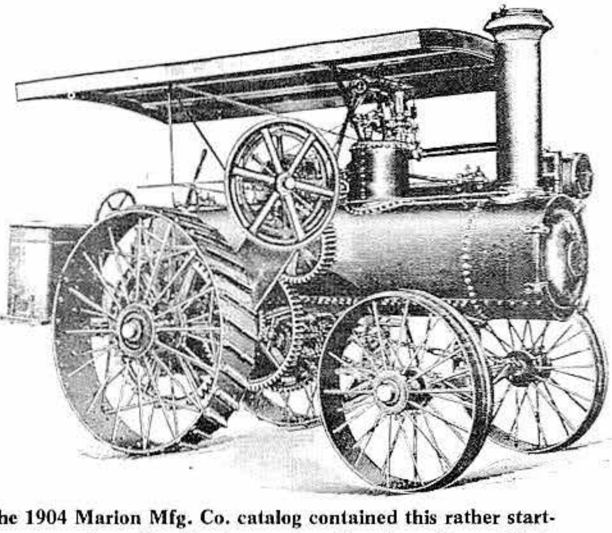
This is the cylinder side of the 1916 model 16, 18, and 20 H.P. Leader steam traction engine. The governor was now attached to the steam chest instead of being mounted on the dome.



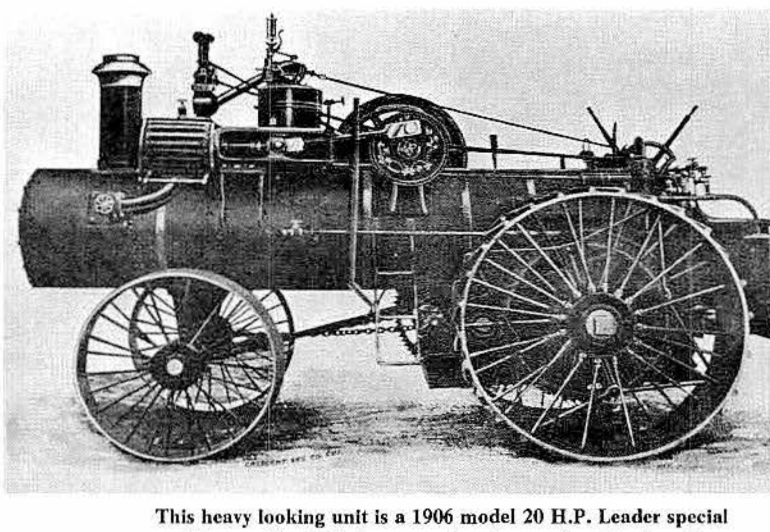
In 1916, this design was used for the 16, 18, and 20 H.P. Leader steam traction engines built by the Marion Mfg. Co. This was a Corliss-type cylinder engine. Note the manner in which the cross head pump and heater were attached. It had a variable exhaust which gave perfect control of the draft with all kinds of fuel.



This is the 1906 version of the 18 and 20 H.P. Leader steam traction engine, built by the Marion Mfg. Co. This engine had a extra long smoke-box, which contained a baffle plate over the flues. The position of the stack prevented throwing fire. The dome was centrally located to prevent priming in going up or downhill. A large compensating gear gave the engine a powerful leverage on the drive wheels. It had a large axle skein and hub, and properly braced and spoked wheels for great strength.

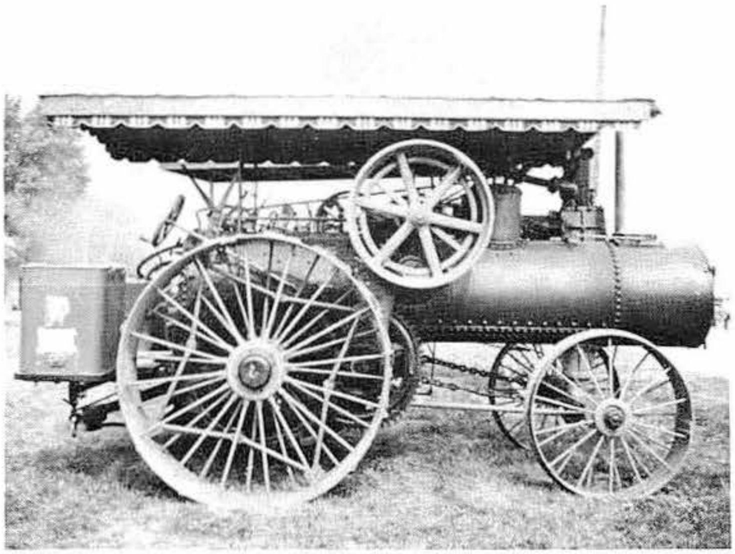


The 1904 Marion Mfg. Co. catalog contained this rather startling engraving of a Leader engine. Somehow the artist or engraver came up with a completely wrong perspective for the flywheel, and thus created a very ridiculous looking machine—even in 1904, artists had bad days.



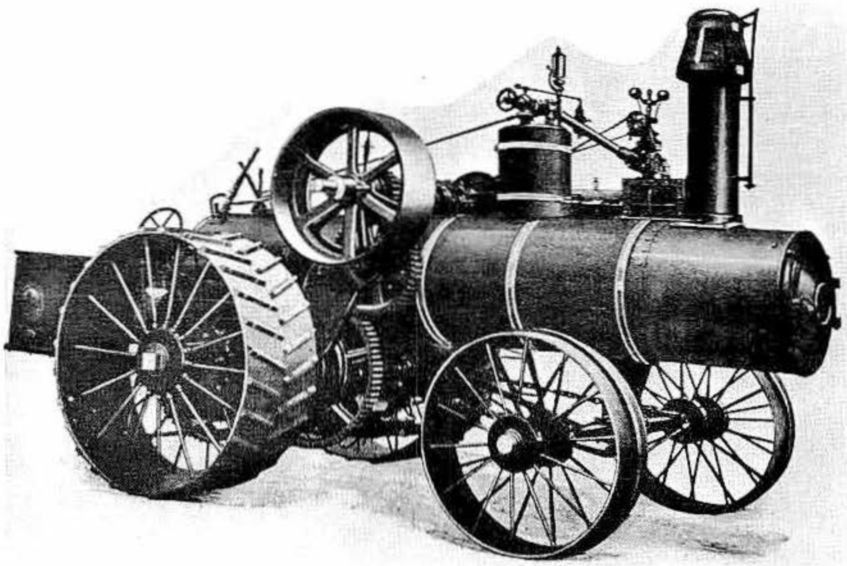
This heavy looking unit is a 1906 model 20 H.P. Leader special road locomotive. This heavy road engine was furnished as either a wood, coal or straw burner. This engine was of special construction, containing many features not used on the regular threshing machine engine.

Leader (Marion Mfg. Co.)

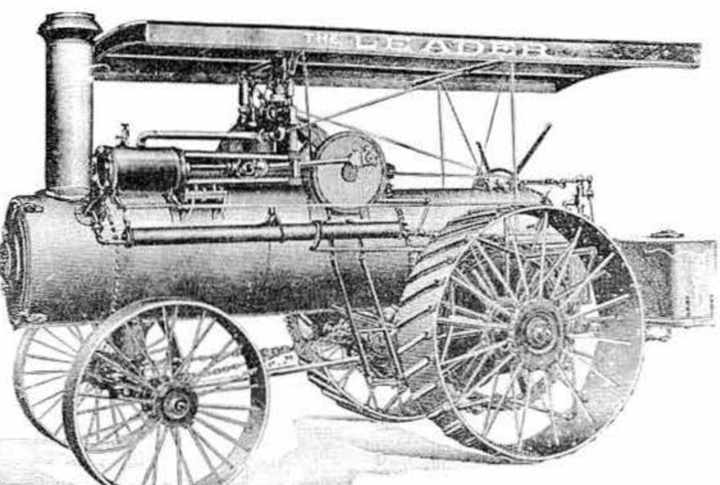


This 20 H.P. Leader steam traction engine, built in 1910, is owned by Charles Deeds of Lancaster, Ohio. It appears at the Miami Valley Steam Threshers Assn. show at London, Ohio. Charles Deeds' Leader is believed to be the only one left today.

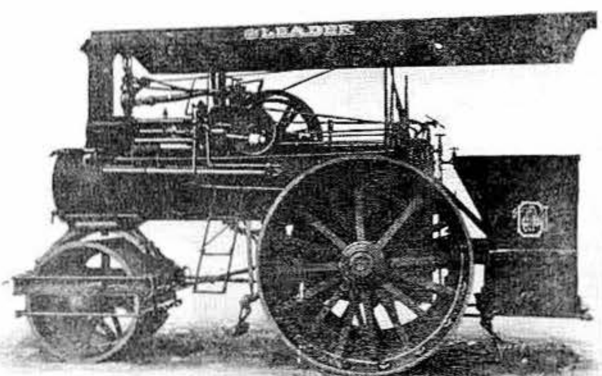
This is the cylinder side of the 20 H.P. Leader owned by Charles Deeds of Lancaster, Ohio.



The 25 H.P. Leader steam traction engine, built in 1906 by Marion Mfg. Co. was designed especially for use in the great northwest, where straw was used for fuel, and threshing was done on a large scale.

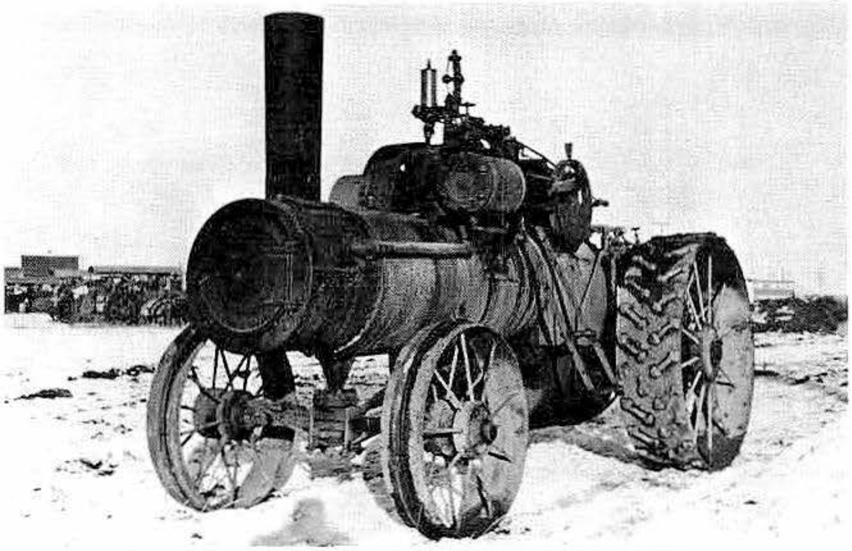


Appearing in fine form is this 1904 version of the 18, 20 and 25 H.P. Leader engine. In 1904 the Marion Mfg. Co. changed the crosshead castings of the engines. A built-in ladder was supplied for easy access to the lubrication points of the piston and rods.

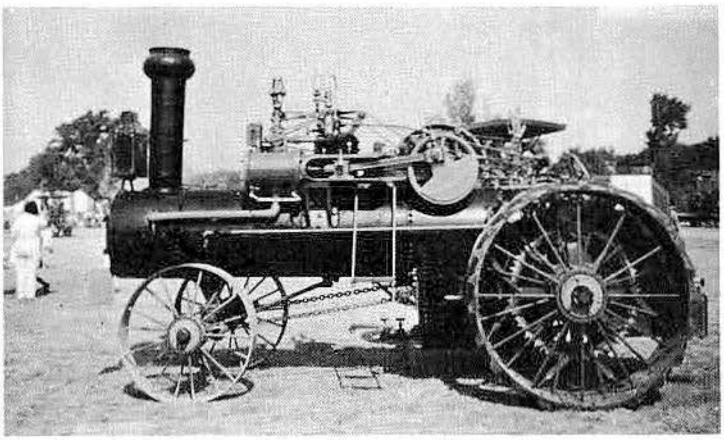


A 10-ton Leader steam road roller was produced in 1916. This engine's boiler was made of high grade open hearth steel plate of extra thickness, so constructed to get the best possible combustion from the fuel, and the greatest amount of heating surface.

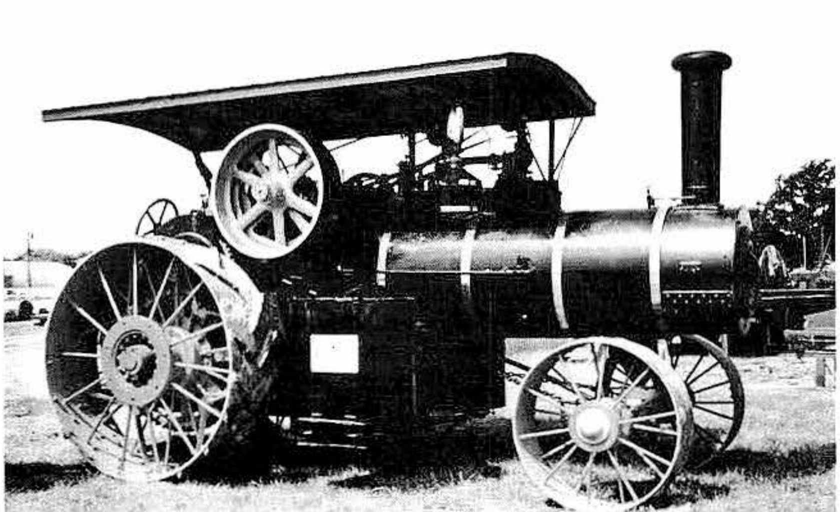
MacDonald Thresher Co.



Rusty but still strong is this 18 H.P. MacDonald steam traction engine built by MacDonald Thresher Co. of Stratford, Ontario, in 1908. The engine is owned by Reynold's Museum of Wetaskiwin, Alberta. Alex MacPherson, mechanic, and John MacDonald, bookkeeper from the firm of Glasgow, MacPherson and Co. of Clinton, Ontario, decided to start a threshing machine business of their own and chose Stratford, Ontario, a railway center 50 miles east of Clinton, as the site of their business venture.



This 20 H.P. MacDonald steam traction engine, built in 1905, is owned by John Hoover of Ontario. It is at the Ontario Steam & Antique Preservers Assn. show at Milton, Ontario. The demand for traction engines finally persuaded the firm to begin their manufacture, and in 1905 arrangements were made with the A. D. Baker Co. of Swanton, Ohio, to build the well-known Baker steam traction engines in Canada.



Alex MacPherson, mechanic, and John MacDonald, bookkeeper from the firm of Glasgow, MacPherson and Company, of Clinton, Ontario, decided to start a threshing machine business of their own. They chose Stratford, Ontario, a railway center fifty miles east, as the site of their business venture.

Running shy of capital to complete their factory, they appealed to John P. MacDonald's brother James to sell his farm and go into partnership with them. The firm, known as MacDonald and MacPherson Company, built and sold without difficulty the 30 threshers they planned for 1877. The success of their machines from the start assured increasing sales and prosperity for the company. These threshers were of the conventional apron or canvas type side shake shoe. About 1880 an end shake shoe was adopted and four years later they placed on the market the first of their deck type separators.

Alex MacPherson did not live many years, and after his death the two MacDonald brothers carried on the business as the MacDonald Manufacturing Company. Young Peter attended school in Stratford for two years then entered the Grand Trunk Railway Shops as an apprentice machinist. In addition to learning his trade, Peter's work on locomotives developed a deep and lasting interest in steam engines. A few years later he and his brother John K. MacDonald joined their father and uncle in the threshing machine business. Here Peter's training and interest was directed towards the mechanical end while his brother, just as naturally, favored working with wood.

In the early 1880s John P. MacDonald's health and other interests resulted in his withdrawal, leaving James and his two sons to carry on the business. James MacDonald died in December 1911. Born in Scotland, he was only a few months old when his family crossed the ocean to Nova Scotia in 1831. John P. was the first child born during the 14 years the MacDonald family remained in Nova Scotia before moving on to the vicinity of Brucefield in what is now the Province of Ontario. Following the death of James MacDonald, the firm was reorganized as the MacDonald Thresher Company Limited and a modern factory was built at the eastern outskirts of Stratford to take care of the increasing output.

The demand for traction engines finally persuaded the firm to begin their manufacture, and in 1905 arrangements were made with the A. D. Baker Company of Swanton, Ohio, to build the well known Baker traction engines in Canada.

The first of these engines, in 18 H.P. size, were built the next year. The 20 and 22 H.P. sizes followed and in 1914 a special 25 H.P. engine was developed to meet the demand for heavier engines for Western Canada.

Early Decker steam traction engines were built at the same time as the 1906 models of A. D. Baker engines. In 1913 the first piston valve engines were built, making the Decker one of the few if not the only, piston valve traction engine built in Canada.

Peter MacDonald lived until Nov. 22nd, 1950 and remained one of the old school of steam lovers who never could reconcile himself to the gas age.

This 20 H.P. MacDonald steam traction engine, built in 1908, is owned by Allan Crone of Ontario. This engine is at the Ontario Steam & Antique Preservers Assn. show at Milton, Ontario. Peter MacDonald lived until 1950 and remained one of the old school of steam lovers who never could reconcile himself to the gas age.

McNamar

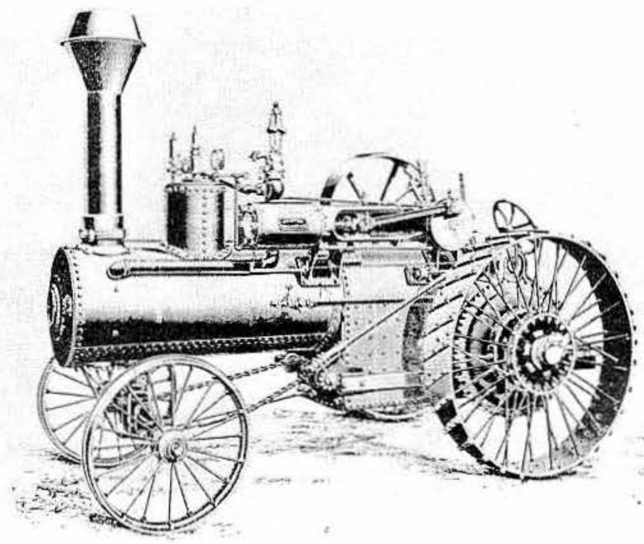
Julius J. D. McNamar, taking over the engine works at Newark, Ohio, from his father John McNamar in 1885, built a complete line of traction, portable and skid engines and sawmills for the next 35 years. McNamar did not build as many engines as Scheidler nor did he match his competitor in showmanship, but the McNamar engine spoke for itself.

The McNamar boiler was built to a proven locomotive design with very little change during the 45 years of production. As proof of its easy steaming abilities, several engines were built to special order, having a cylinder rating of 2 to 4 H.P. beyond the boiler rating which gave the operator a mighty handy engine in hilly sections. As far as record or inquiry can reach there has never been a failure or explosion traceable to a McNamar boiler.

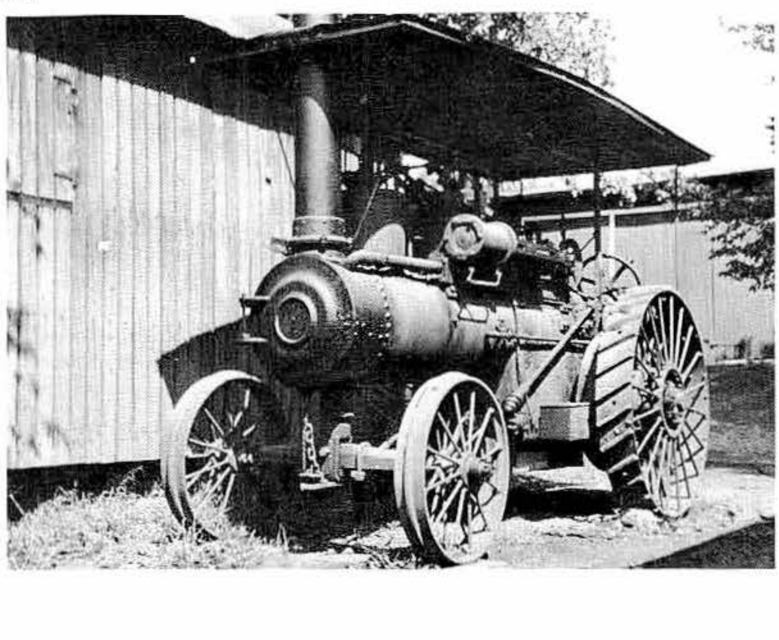
The McNamar engine and gearing designs were just as stable. Grime reverse was used entirely to 1903, after which the Stevenson link was it. Heater bed plate was used on all sizes to 1904, after which the Girder bed plate was available on the 14 and 16 H.P. sizes—not much change during the many years of building. All McNamar engines were fitted with a balanced slide valve and all tractions had a good clutch and foot brake on the intermediate shaft, with a differential lock. McNamar engines were single geared with the compensating gear or differential in the left drive wheel on the main axle and thereby hangs an interesting point.

McNamar used an all spur gear differential of his own patent, even on the first tractions built in 1892. The driving effort on the outer, internal gear (left wheel) was just twice that applied to the inner gear (keyed to the right wheel), and thus it follows that the left driver did the greater part of the pulling. This was cleverly offset by building the engine heavy on the left side—which resulted in a good pulling arrangement and satisfactory steering.

As evidence of driving effort concentrated in the left wheel, consider that one 16 H.P. engine wore the third set of cast cleats through to the underside hollows in 27 seasons of work, while the original cleats on the right drive were still serviceable. Also on a steep-hill pull, that engine would just teeter the spindles in the front wheel hubs and never rear up beyond that point. There is engine balance for you. The last traction engine McNamar built was in 1920.



Built about 1900, this 8 H.P. McNamar steam traction engine was pictured in a McNamar Co. catalog. The boiler was built to a proven locomotive design, with very little change during the 45 years of production. As proof of its easy steaming abilities, several engines were built to special order having a cylinder rating of 2 to 4 H.P. beyond the boiler rating, which gave the operator a mighty handy engine in hilly sections. As far as records show, there had never been a failure or explosion of a McNamar boiler.



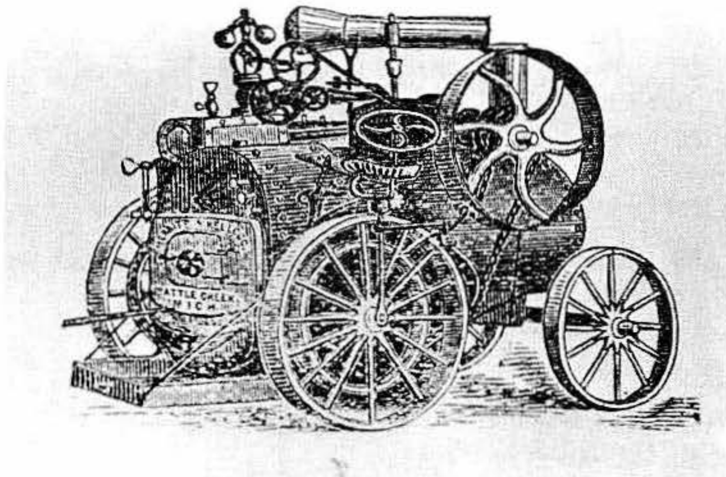
This 8 H.P. McNamar steam traction engine, built by McNamar Co. of Newark, Ohio, in 1905, is owned by Jesse P. Radabaugh of North Lawrence, Ohio. Julius J. D. McNamar, taking over the engine works from his father John McNamar in 1885, built a complete line of steam traction engines, portable and skid engines and sawmills for the next 35 years. McNamar did not build as many engines as Scheidler nor did he match his competitor in showmanship, but the McNamar engine spoke for itself.

Merrit & Kellogg

In 1871, Richard Merritt and Dan W. Kellogg, under the name of Merritt & Kellogg, began the manufacture of self-propelled steam traction engines in Battle Creek, Michigan. At the tests of the steam traction engine up Maple Street hill, it ascended the hill without using half of its reserve power and was the wonder of the town. In a few years, all the threshing machine companies in Battle Creek were making steam traction engines.

This first steam traction engine furnished them with a basic idea which later developed into a lighter type of self-propelling vehicle, the automobile.

Merritt & Kellogg Co. did not last long, and the old buildings were rented for store purposes. In later years they have been torn down and brick blocks erected on the site.



This unbelievable looking thing is an 1871 Merrit & Kellogg self-propelled steam traction engine. It was built by Richard Merritt and Daniel W. Kellogg, operating in Battle Creek, Mich., under the name of Merrit & Kellogg Co. In the manner of portable engines of the era, this machine used a folding smokestack, and was not equipped with either water tanks or fuel bunker. In reality, it was a portable engine with the ability to move itself for short distances, but not a steam traction engine in the true sense of the word. The engineer sat out-board of the rear wheel, on a cast iron seat supported by rather light pipe bracing. This machine required two men for operation. There is very little evidence to show that many of these engines were built, or that any were really successful. This rather poor engraving is the only illustration that could be found of a Merrit & Kellogg engine.

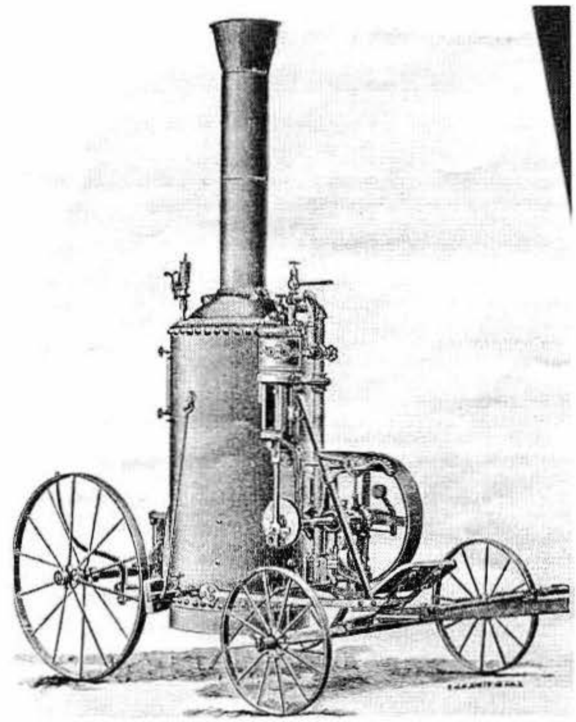
Messinger Mfg. Co.

The Messinger Manufacturing Co. of Tatamy, Pa., was founded by Samuel S. Messinger in 1857, and was incorporated under its present title in February, 1912, with a capital stock of $100,000. Samuel S. Messinger was proprietor of the Empire Agricultural Co. of Tatamy, Pa., and Senior member of the firm of S. S. Messinger & Son, iron founders and manufacturers of agricultural implements and engines. He was born June 8, 1823. His great grandfather emigrated from Switzerland to America in 1745, and in 1771 settled in Northhampton County. From the Penn heirs he bought a tract of land in Palmer township (Palmer township was once included in Tatamy borough), on which he located, becoming the fore-father of the family in this country.

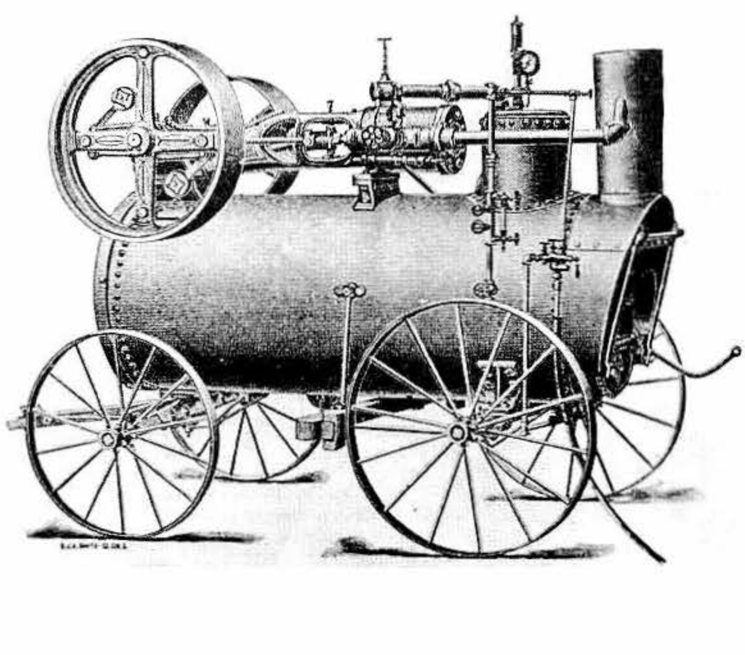
In 1857, Mr. Samuel S. Messinger began the manufacture of plows and plowshares. The enterprise was conducted under the name of S. S. Messinger until 1861, at which time he took in several gentlemen as partners, the title then being changed to Messinger, Shimer, Werkheimer and Allsfeld. From 1864 to 1868 the firm name was Messinger and Shimer, the principal product being the Excellsior mower and reaper. In 1873, Mr. Messinger admitted to partnership his son, G. Frank Messinger and the firm name changed to S. S. Messinger & Son. In 1876 his son Charles B. Messinger purchased his father's interest, and until 1883 the firm name was S. S. Messinger's Sons. In 1883, the father purchased back his interest, once again became head of the firm, and conducted the business under the name of S. S. Messinger and Son.

The Messinger Mfg. Co. made the following: Undershot grain thresher; Overshot thresher; cleaner run by one-horse tread power; Empire iron frame lever power; cross-cut saw with swinging table; Gem pole saw; the Empire portable steam engine; about three steam traction engines; gasoline engines; power corn sheller; Empire feed and ensilage cutter, and other farm machines.

G. Frank Messinger died in 1928. The firm evidently went out of business in 1970.

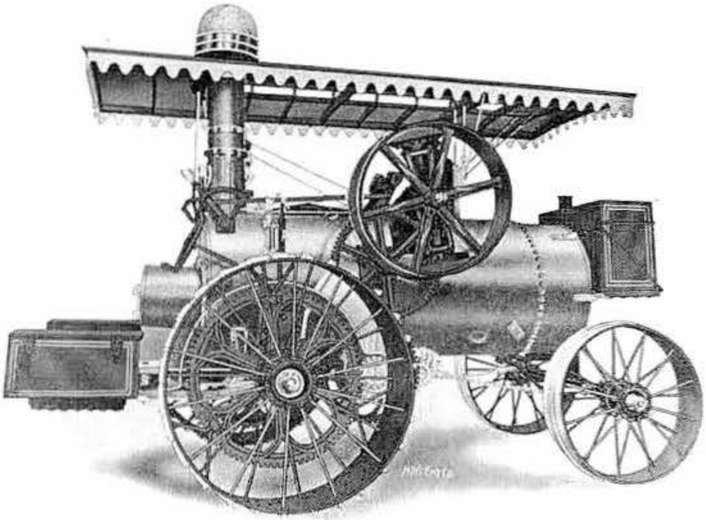


A 7 H.P. Messinger steam portable engine, built in 1898 by the Messinger Manufacturing Co., Tatamy, Pa. This is the Empire vertical mounted steam portable engine. It used the same governor as did the horizontal engine. It was built in 5, 7, and 10 H.P. sizes.

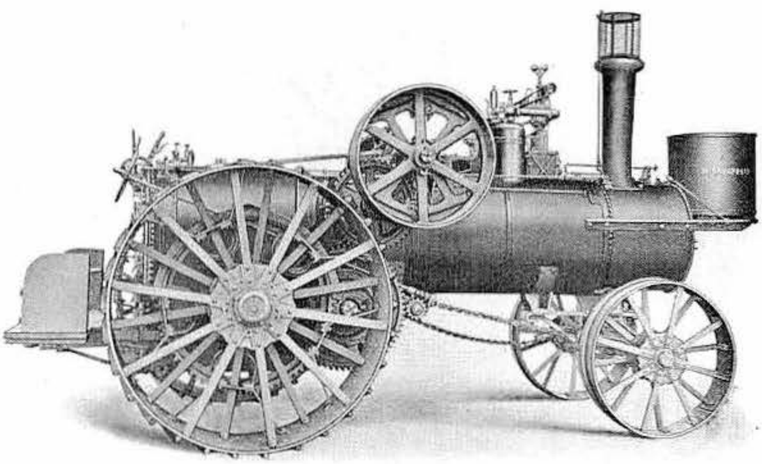


A 20 H.P. Messinger steam portable engine, built in 1889 by the Messinger Manufacturing Co., Tatamy, Pa. This engine is a horizontal automatic, on a Cornish boiler. The Cornish boiler had a large central flue passing through the whole length of the boiler, which was adapted to any description of fuel. The shape of the fire-box made it much stronger than any other portable boiler, it was claimed.

Minneapolis Threshing Machine Co.



This is the return flue, straw burning version of the 1906 Minneapolis simple engine. This boiler is the Scotch Marine type, designed to burn wood, coal, or straw. The Minneapolis Threshing Machine Co. started in 1887, when James F. MacDonald brought his small threshing machine business from Fond du Lac, Wis., to Hopkins (West Minneapolis, Minn.,) and began turning out the Victory separator. Two years later the company began producing steam traction engines.



Built in 1906 was this Minneapolis simple engine. Mounted on direct flue, fire-box boiler, it was designed especially for plowing and heavy draft work. The Great Minneapolis line of steam traction engines covered every size and type of engine used by the American farmer and thresherman.

The Minneapolis Threshing Machine Company story started in 1887, when James F. MacDonald brought his small threshing machine business from Fond du Lac, Wis., to Hopkins (West Minneapolis) Minn., and began turning out the Victory separator. Two years later the company began producing the first steam traction engines.

As the company grew, so did Hopkins. Many of the workers were skilled machinists from Scandinavia and Central European countries, who settled on small plots of ground around Hopkins, Minn. This company made 7,981 steam traction engines.

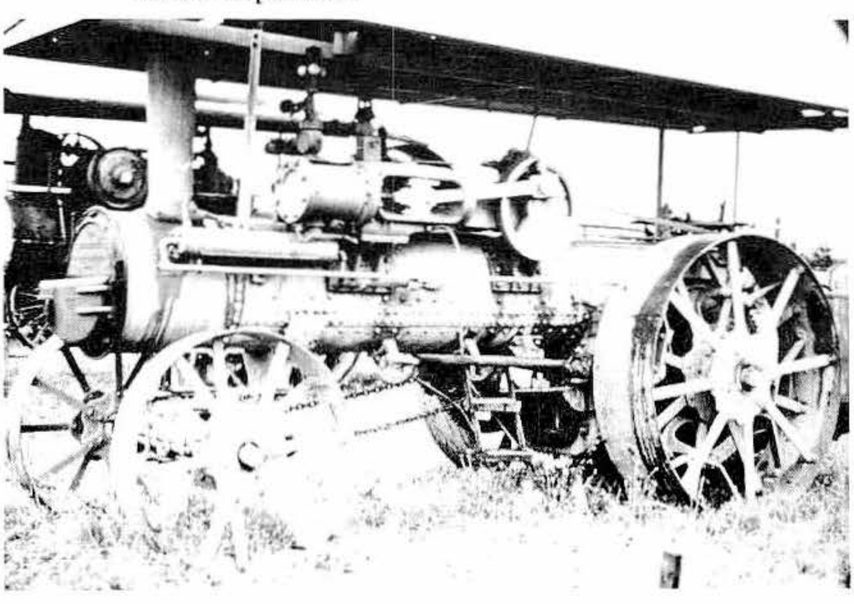
The Minneapolis Threshing Machine Co., made the following: The Minneapolis simple engine, mounted on a direct flue, fire box boiler; simple steam traction engine on return flue boiler; simple traction engine on direct flue boiler, using wood, coal, straw or oil burner with flat spoke wheels and heavy plowing gear; the Minneapolis double cylinder steam traction engine on direct flue boiler using wood, and coal, straw or oil burner; a compound steam traction engine or return flue boiler using wood and coal or oil burner; the Minneapolis compound engine on direct flue fire box boiler; Minneapolis portable steam engines on return flue boiler; Minneapolis double cylinder stationary engine; the Minneapolis compound stationary engine, and the Minneapolis simple (reversible) steam engine on direct flue fire box boiler (mounted on skids).

The Minneapolis Threshing Machine Co. also made the following: separators, the Great Minneapolis line of Dingee-Woodbury horse powers; the Minneapolis No. 2 dustless cylinder corn sheller; round steel water tanks; Minneapolis force pumps, and the Minneapolis power lift engine gang plows.

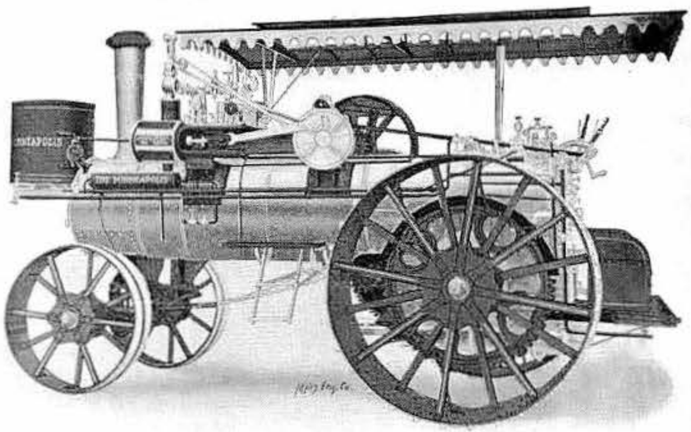
Formation of the Minneapolis-Moline Power Implement Co., incorporated in 1929, was the result of a merger of the Minneapolis Steel and Machinery Co., founded in 1902, the Minneapolis Threshing Co., founded in 1887, and the Moline Implement Co., founded in 1870. The Minneapolis Steel and Machinery Co., organized in 1902, had been building Twin City tractors since 1908, and at the time of merger was engaged in the manufacture of threshing machines and tractors. The combined assets of the three firms in 1929 was $33 million, and the new company emerged as the fifth largest farm machinery manufacturer in the country.

Today the Minneapolis-Moline Company is part of the White Motor Corporation.

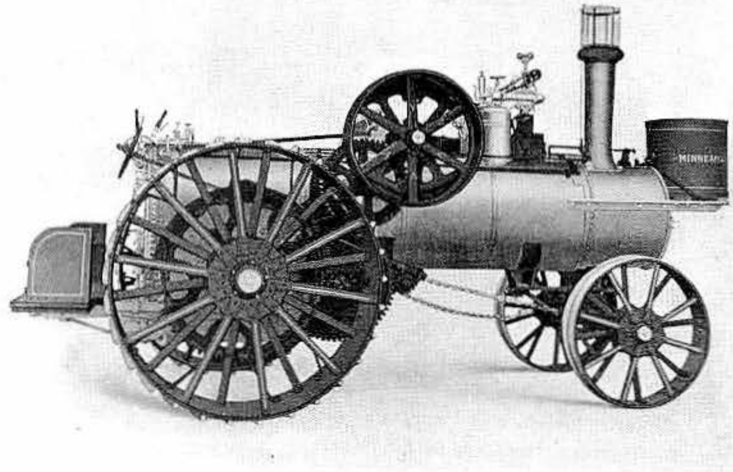
This is a 18 H.P. Minneapolis steam traction engine, built by Minneapolis Threshing Co. of Hopkins, Minn. The engine is a single cylinder, front and side mount.



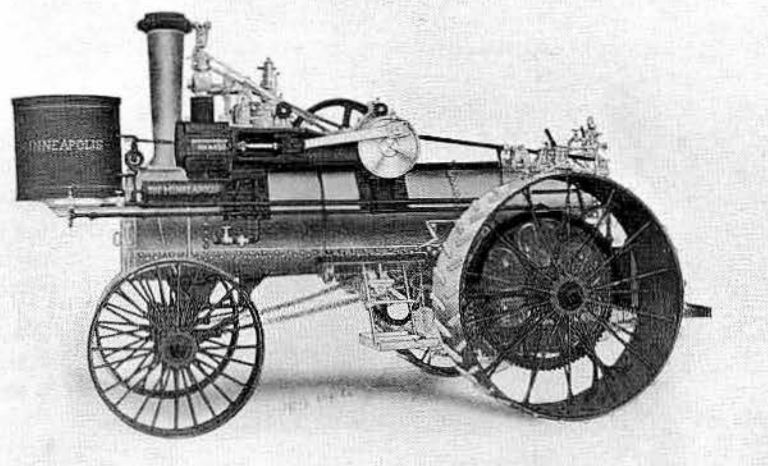
Minneapolis Threshing Machine Co.



This is the cylinder side of a 1906 Minneapolis simple engine, bearing No. 4506. Mounted on a direct flue boiler, it would burn wood, coal, straw, or oil. It had flat spoke wheels and heavy plowing gear.

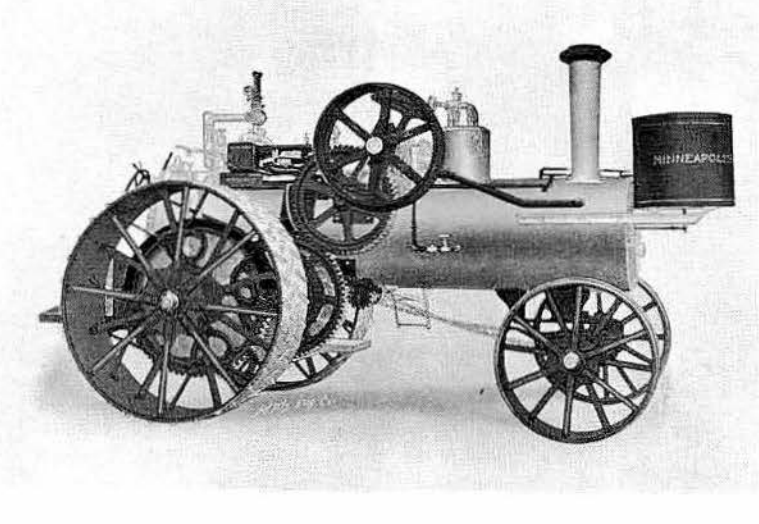


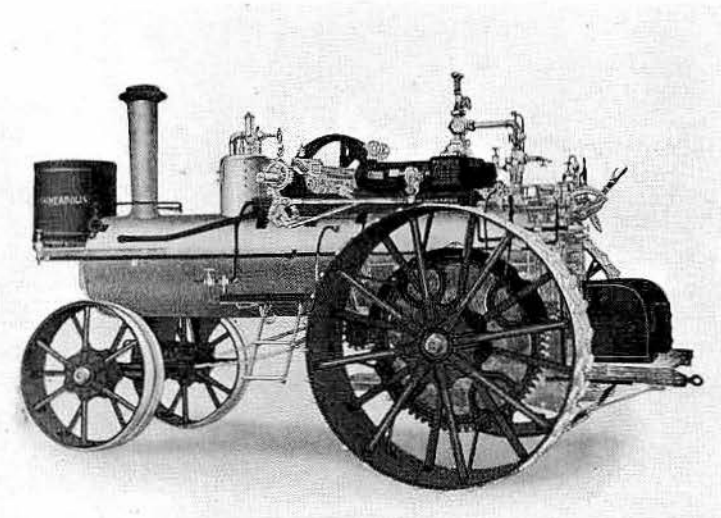
Shown without its fringed canopy is this 1906 Minneapolis simple engine. Mounted on a direct flue boiler, it would burn wood, coal, straw or oil. This is the flywheel side.



This is Minneapolis steam traction engine No. 4450. It is a simple engine, mounted on a direct flue boiler. It would burn wood, coal, straw or oil. It had round spoke wheels, and standard gear. This is the cylinder side.

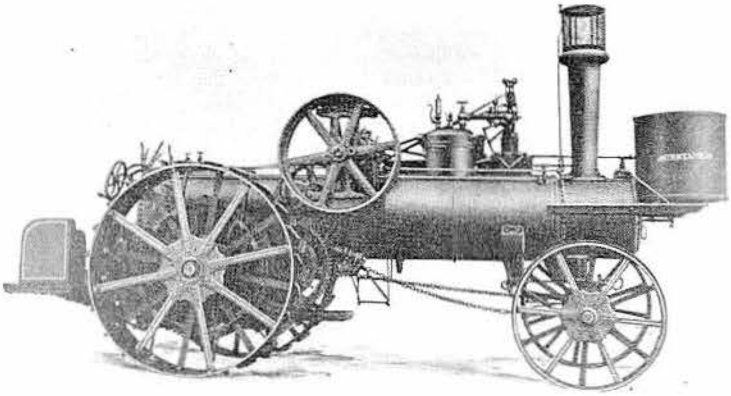
This is the flywheel side of the 1906 Minneapolis double cylinder engine, built in 1906. This engine, designed for heavy plowing or hauling, used substantial wheels with flat spokes. The front-mounted water tank seems a bit on the small side for an engine of this size.



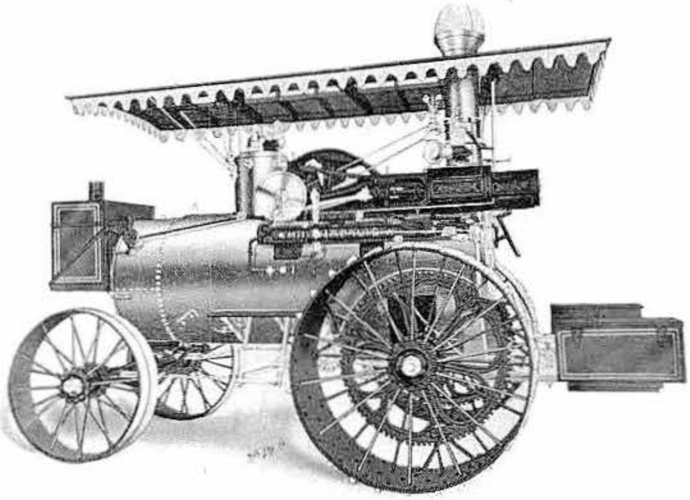


Built for heavy-duty work in 1906 was this Minneapolis double cylinder engine. Mounted on a direct flue boiler, it would burn wood, coal, straw or oil. It had flat spoke wheels, and heavy plowing gear. This is the cylinder side.

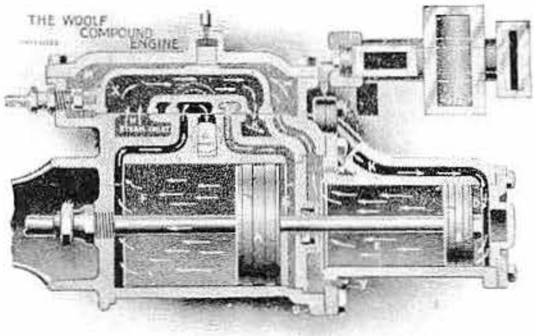
Minneapolis Threshing Machine Co.



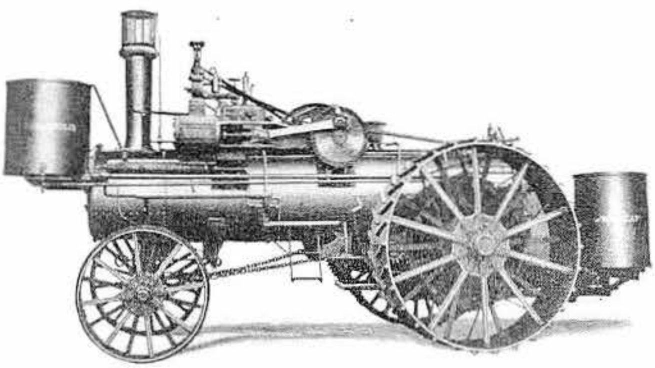
Built in 1907 was this Minneapolis simple engine. Mounted on a direct flue fire-box boiler, it had standard gears, designed for ordinary farm work and threshing. This engine was equipped with a Duplex pump, injector, cylinder oil pump, hard oil cups, and patent heater.



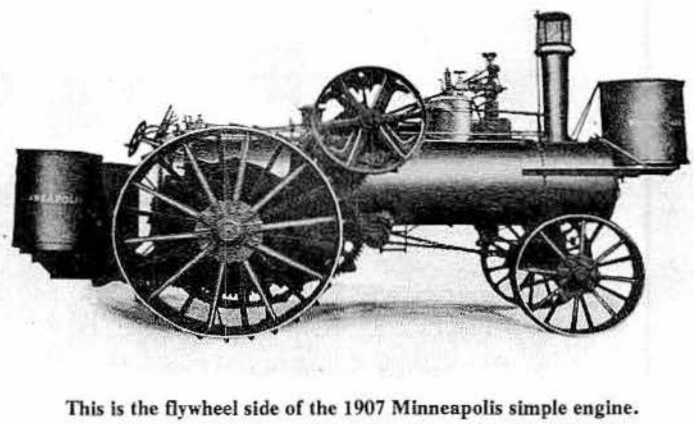
A pretty but complicated looking machine was this rather stubby Minneapolis return flue compound engine, built in 1906. The engine used the Woolf compound cylinder, which ran at a maximum pressure of 125 lbs. As were most Minneapolis engines of the 1900s, this unit was designed to burn coal, wood, straw, or oil, depending upon which adapters were used in the fire-box. The canopy top with its scalloped trimming was an extra cost item, as was the spark arrester on top of the smokestack.



The Woolf Compound cylinders used by the Minneapolis Line were a complete success. They gave all the benefits derived from compound cylinders, but with the same steam pressure used in simple engines—not exceeding 125 pounds. The high and low-pressure cylinders were set up close together. One valve performed all the functions for controlling the admission of steam to the high-pressure part of the piston, its passage from the high to the low-pressure part of the piston, and the final exhaust from the low-pressure cylinder.

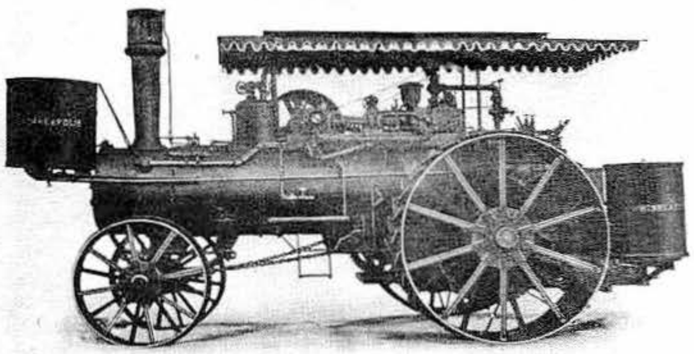


Equipped for heavy plowing was this 1907 model Minneapolis simple engine. Mounted on a direct flue fire-box boiler, it would burn wood, coal, straw, or oil. The straw burner engines were all equipped with grates for burning wood or coal.

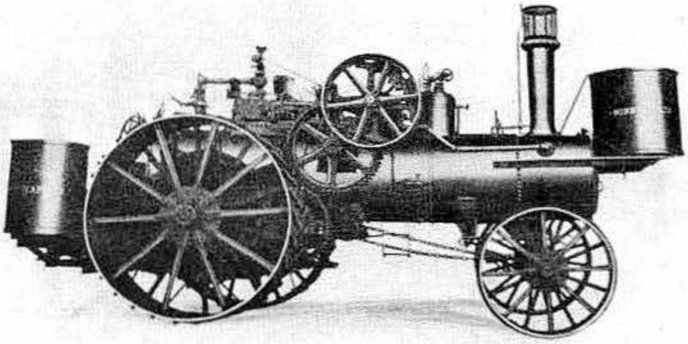


This is the flywheel side of the 1907 Minneapolis simple engine. The piston head of this engine was hollow, made of one casting, and securely fastened to the steel piston rod. The piston rings were cast iron, turned eccentrically, slightly larger than the cylinder. After they were cut, they were sprung into a corresponding groove in the piston, similar to the rings in today's automobile engines.

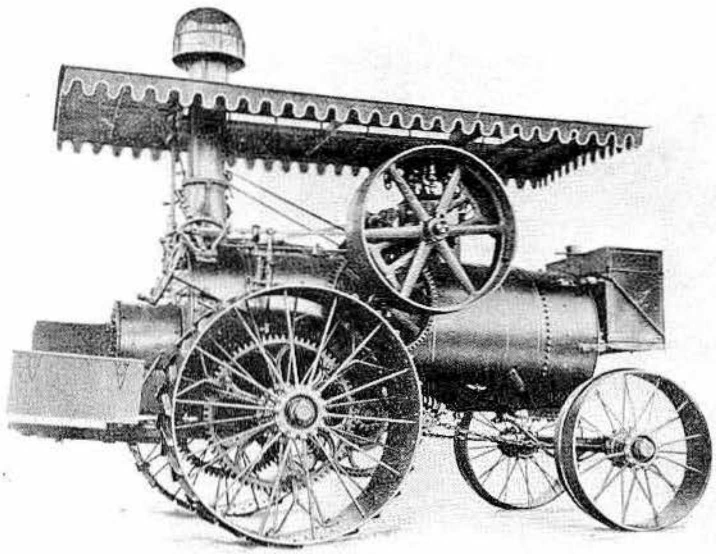
Minneapolis Threshing Machine Co.



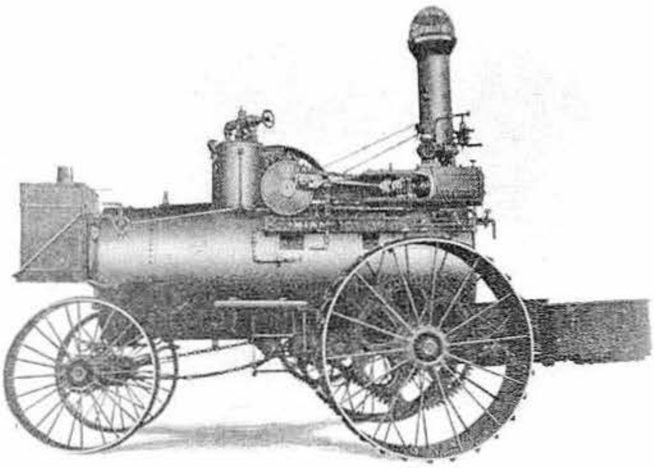
Designed for very heavy work was this 1907 Minneapolis double cylinder engine. Mounted on a direct flue fire-box boiler, it had heavy plowing gear. The flywheel, steering lever, reverse lever and friction clutch lever were all on the right-hand side of the engine, affording a great convenience in running on the road or in lining to a separator for threshing.



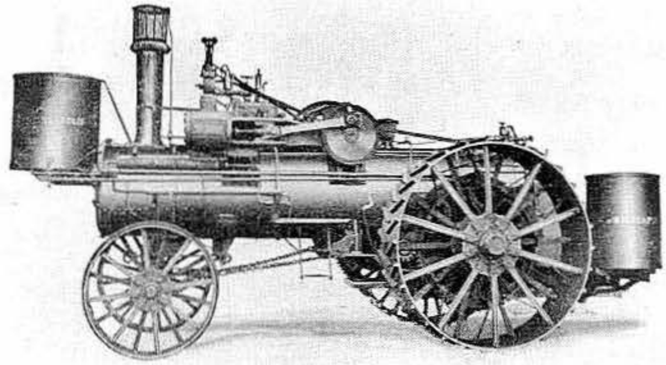
This is the flywheel side of the 1907 heavy-duty Minneapolis double engine. It was mounted on a high pressure, direct flue fire-box boiler designed to burn coal, wood, or straw. It came equipped with flat spoke wheels and heavy plowing gear, but the extra water tanks and fuel bunker shown here were extra cost items. Standard items included a Duplex pump injector and a cylinder oil pump.



Rather high and stubby was this return flue boiler Minneapolis simple engine, built in 1907. It was designed to burn either coal or wood, but not straw or oil, unless equipped with special adapters for these fuels. The flange steel boiler was of Cornish marine pattern, recognized as a very economical boiler. The canopy with scalloped fringe trimming was considered an accessory.

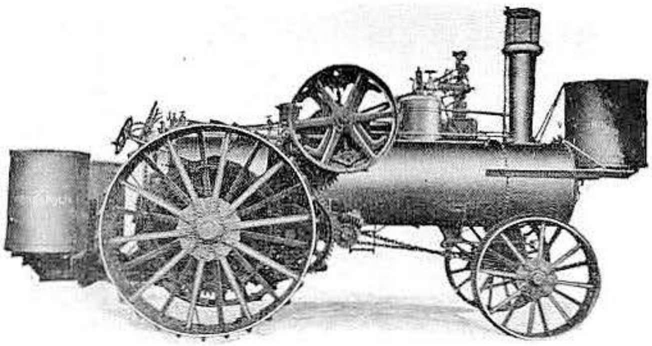


Shown without its accessory top is this Minneapolis simple engine, mounted on a return flue boiler. This is the cylinder side. Note that both the cylinder and the smokestack faced the engineer. Barely visible is the throttle of Minneapolis' own design. It was of cast iron, on the principle of a butterfly and roller pattern.

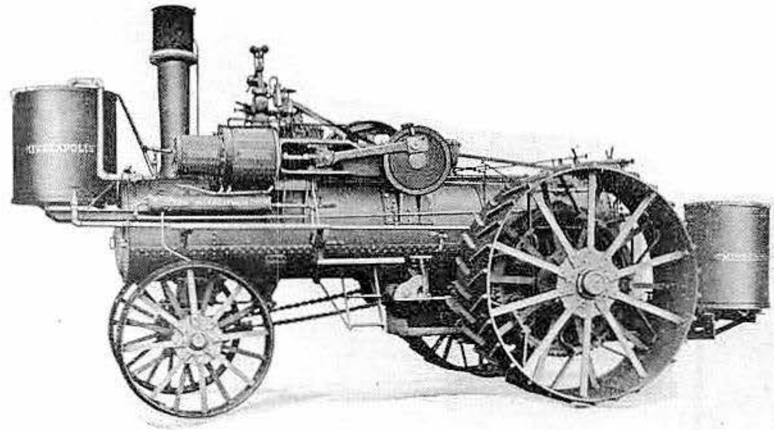


By 1908, Minneapolis was producing this style simple engine for medium-duty work. The engine, mounted on a direct flue firebox boiler, would burn wood, coal or straw. It is shown here fitted with heavy plowing gear and an extra fuel bunker and water tank. It could be fitted with a locomotive cab or full canopy at extra cost.

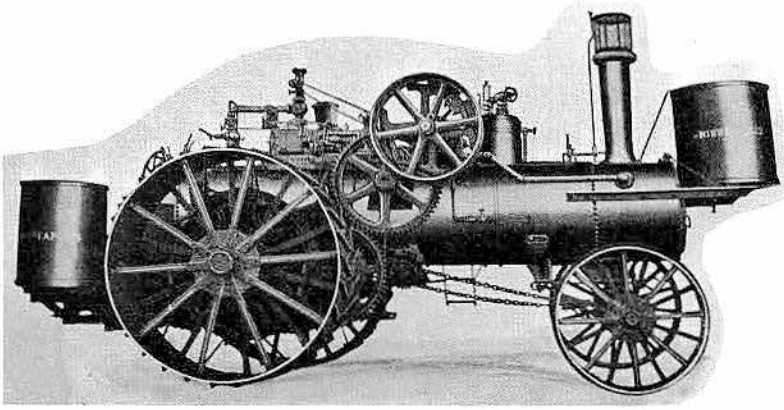
Minneapolis Threshing Machine Co.



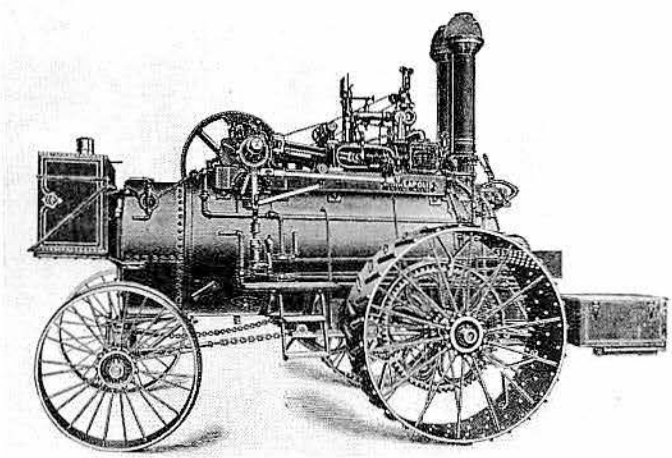
This is the flywheel side of the 1908 Minneapolis simple engine. It is shown fitted with heavy plowing gear and extra water tank and fuel bunker on the footboards. These were added cost items. At this point, Minneapolis Thresher Co. called itself the builder of the most extensive line of engines in the world. Among its products were simple, double and compound engines on direct flue, fire-box boilers, simple and compound engines on the return flue boiler, skid engines, and simple, double and compound stationary engines.



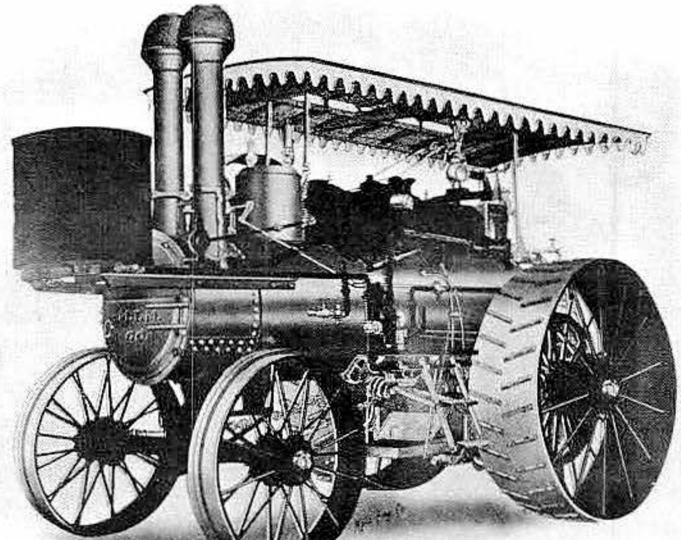
Rated at a minimum of 35 H.P. was this 1908 Minneapolis compound engine. Mounted on a direct flue fire-box boiler, it would burn wood, coal and straw. It had heavy plowing gear. This is the cylinder side. The cylinder, steam chest, guides and bearing for the main shaft were all cast in one solid piece, and securely mounted on the boiler. The cylinder and guides were both bored at one and the same time, which insured perfect travel of the crosshead and piston.



Built in 1908 was this Minneapolis double cylinder engine. Mounted on a direct flue fire-box boiler, it would burn wood, coal and straw. This is the flywheel side. The double cylinder engine was made in one solid casting. The double cylinders were set parallel to one another. Each was attached to a heavy bed-plate and heater frame, cast in one piece and securely bolted to the boiler.

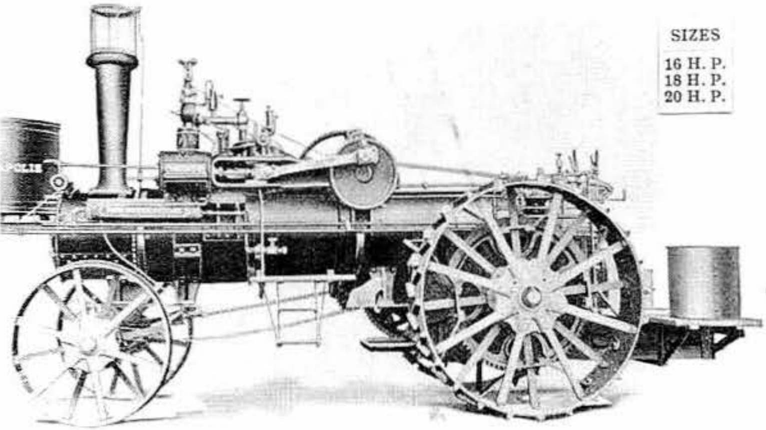


Minneapolis also built its double cylinder, double stacked engine on a return flue boiler. This was engine No. 3102. The company made about 8,711.

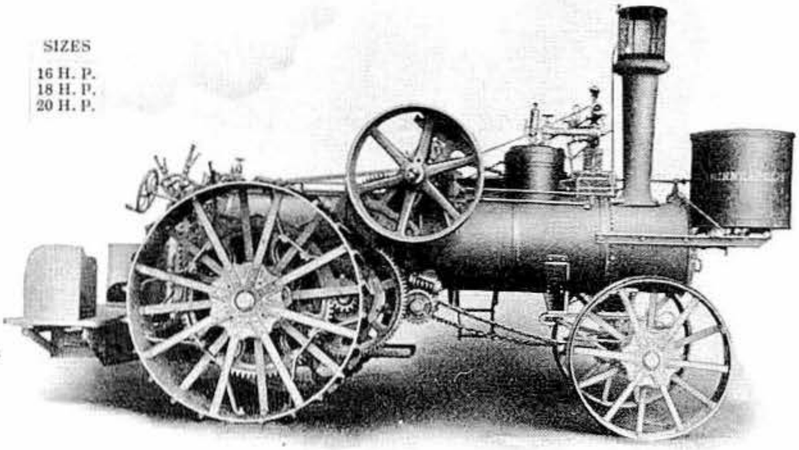


This oddity is a Minneapolis double cylinder, double stacked engine. Mounted on a direct flue fire-box boiler, it would burn wood, coal, straw or oil. It had heavy plowing gear. This is the cylinder side. The double stacks, in principle, greatly increased the draft through a double cylinder engine, as the exhaust from each cylinder was fed directly into its own stack. Thus, each stack in effect acted as a single stack on a simple engine, and when combined, gave the effect of two independently operating engines.

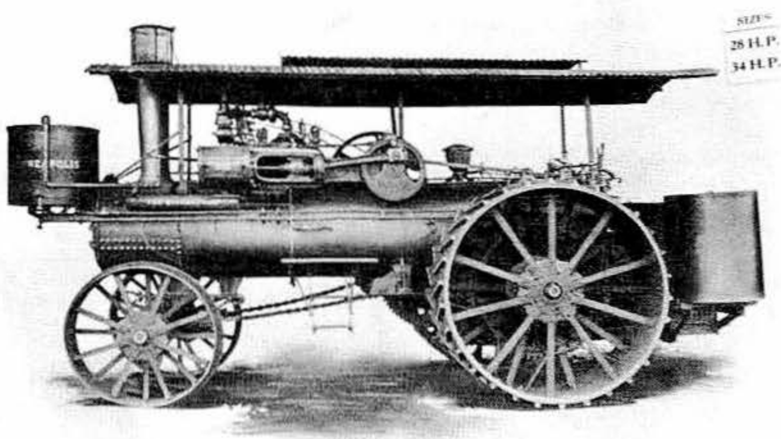
Minneapolis Threshing Machine Co.



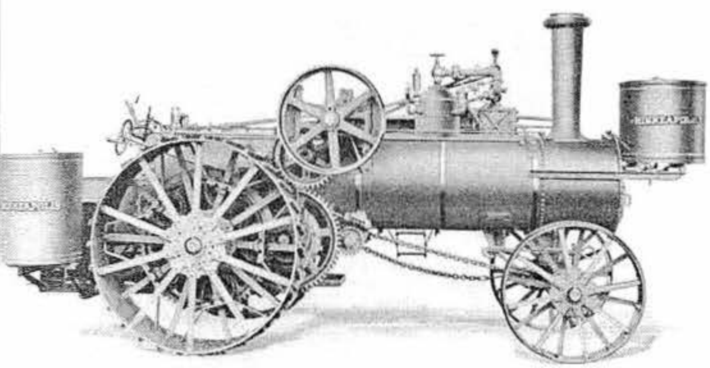
This is the cylinder side of the 1916 model Minneapolis simple engine, fitted with standard gear. It could be supplied in 16, 18 or 20 H.P. sizes. A canopy top was available at extra cost, and the extra tank and bunker shown on the platform were also considered accessories.



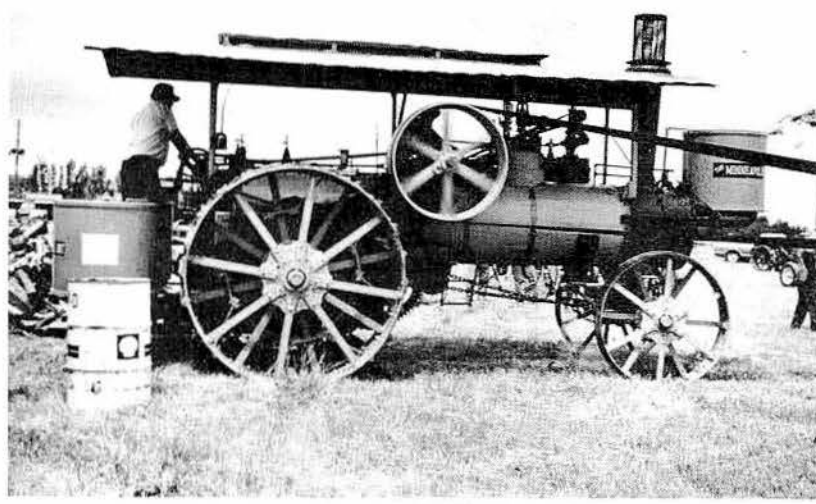
This is the 1916 version of the Minneapolis simple engine. This engine was built in 16, 18 and 20 H.P. sizes. It would burn wood, coal, and straw. This is the flywheel side.



This is the new 1916 model Minneapolis Canadian simple engine. It was built in 28 and 34 H.P. sizes, and would burn wood, coal and straw. This is the cylinder side. It was regularly equipped with full steel canopy, heavy steel platform, one large tank at the front end, two large tanks on the platform, and a gear oiler.

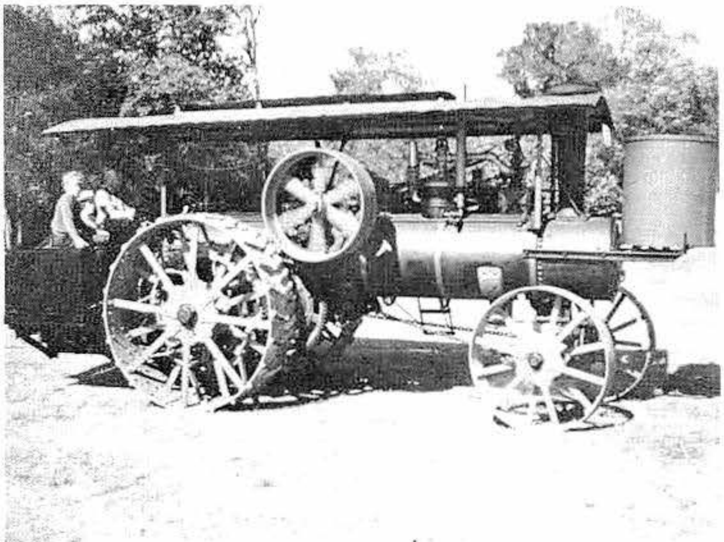


Some design changes were noticeable on the 1917 Minneapolis simple engine. It was built in 16, 20, 24, and 28 H.P. sizes, and would burn wood, coal, or straw. This is the flywheel side. The Minneapolis steam traction engine used black for the boiler, dome and smokestack, and green for the steering wheel and levers. The ground wheels were red, as were the water tank in front and on the back platform, flywheel, and the cylinder. The pipes were green.

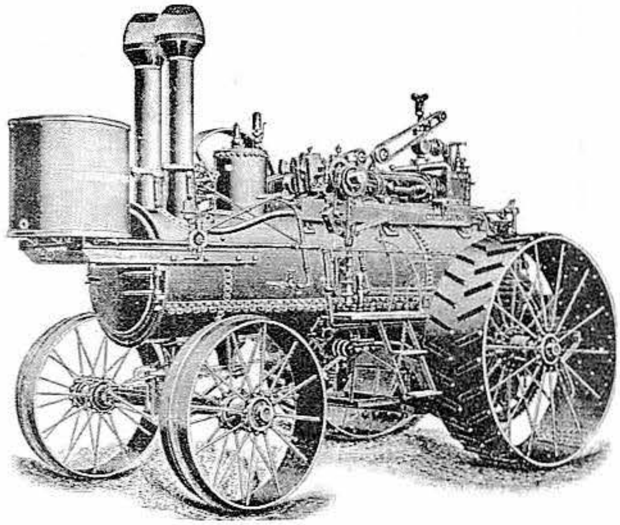


Hard at work on the belt is this 20 H.P. Minneapolis steam traction engine, built in 1923. It is owned by Dennis & Marjorie Webb of Beamsville, Canada, and is at the Norwich and District Historical Society show at Norwich, Ontario. This engine carries an Ontario government certificate for shell pressure of 120 lbs. It was purchased in 1968 from E. Huber of Brookville, Ind.

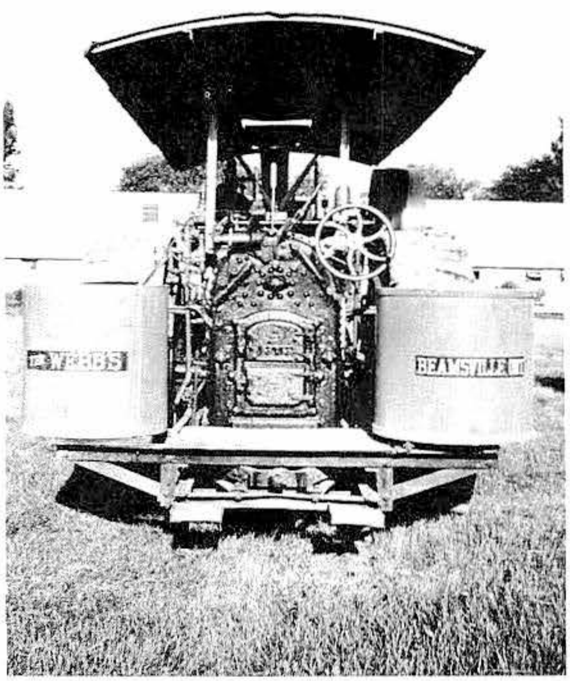
Minneapolis Threshing Machine Co.



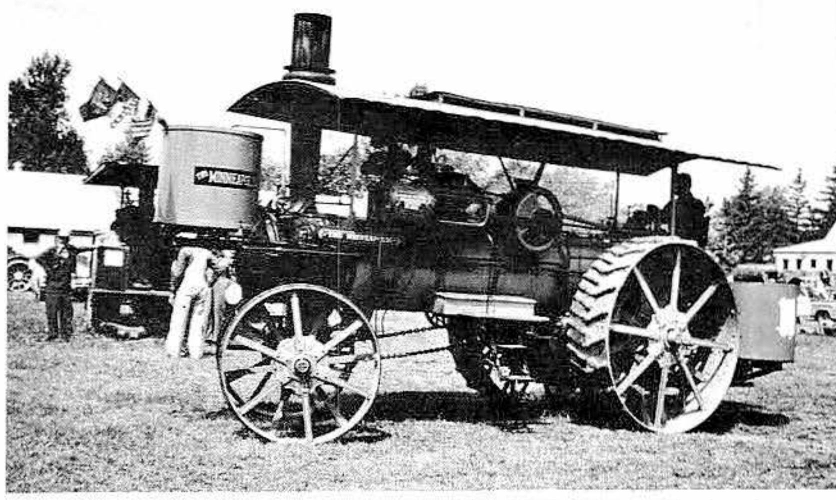
This 20 H.P. Minneapolis steam traction engine, built in 1922, is owned by James Cotter of Aliquippa, Pa. It is running at the Tri-State Historical Steam Engine Assn. show at Hookstown, Pa. Formation of the Minneapolis-Moline Power Implement Co., incorporated in 1929, was of a merger of the Minneapolis Steel and Machinery Co., founded in 1902, the Minneapolis Threshing Co., founded in 1887, and the Moline Implement Co., founded in 1870. The Minneapolis Steel and Machinery Co., organized in 1902, had been building Twin City tractors since 1908, and at the time of merger was engaged in the manufacture of threshing machines and tractors. The combined assets of the three firms in 1929 was $33 million, and the new company emerged as the fifth largest farm machinery manufacturer in the U.S. Today the Minneapolis-Moline Co., is part of the White Motor Corp., of Cleveland, Ohio.



A Minneapolis steam traction engine with double smokestack was pictured in a 1904 Minneapolis Co., catalog. This engine is a double cylinder on a direct flue boiler. The advantage of two smokestacks on a double cylinder engine was that a single engine, running 250 revolutions per minute, exhausted into the stack 500 times per minute, and a double cylinder engine, running 250 revolutions per minute, with but one smokestack, exhausted into the stack 1,000 times per minute. This would produce practically the same effect upon the combustion that would be produced when a blower was turned into the stack, viz, it draws nearly all of the fire-box through the center flues, producing imperfect combustion, and consuming more fuel. Thus a double cylinder engine with but two smokestacks avoids this problem. However, several years later Minneapolis returned to a single stack for its doubles.



Here is a good view of the two mounted water tanks on the back end of the engine, and the fire-box and controls of a 20 H.P. Minneapolis simple engine.



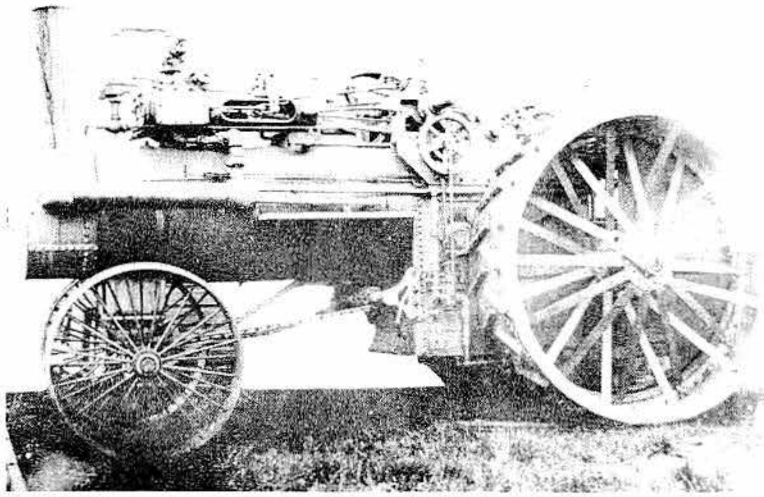
This is the cylinder side of the 20 H.P. Minneapolis steam traction engine, built in 1923, and owned by Dennis & Marjorie Webb of Beamville, Ontario.

George W. Morris

Prior to 1895-96 George W. Morris had operated a small thresher manufacturing and supply repair business in Brantford, Ontario, Canada. In 1896, he had J. I. Case Co. of Racine, Wis., build three steam traction engines. These engines were said to be of about 120 B.H.P. One was shipped to North Dakota, and not being satisfactory was soon abandoned. The others were sent to foreign trade and followed the same fate as the one that went to North Dakota.

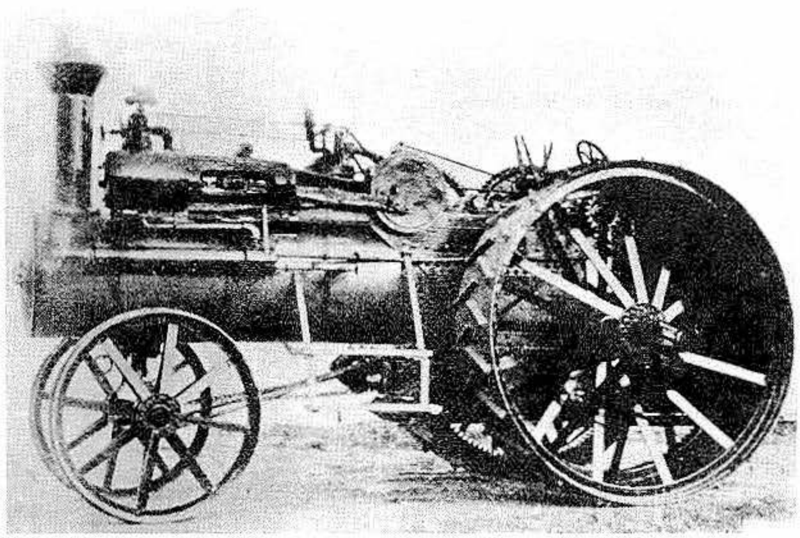
Late in 1897 Morris went to work directly for Case as a design engineer, and on May 30, 1899 was granted a U.S. patent for a method of mounting the gearing of a traction engine. This patent was assigned to J. I. Case Threshing Machine Co. of Racine, and was used on all steam traction engines built by Case thereafter. This particular idea is all that is left to tell any thing about this person.

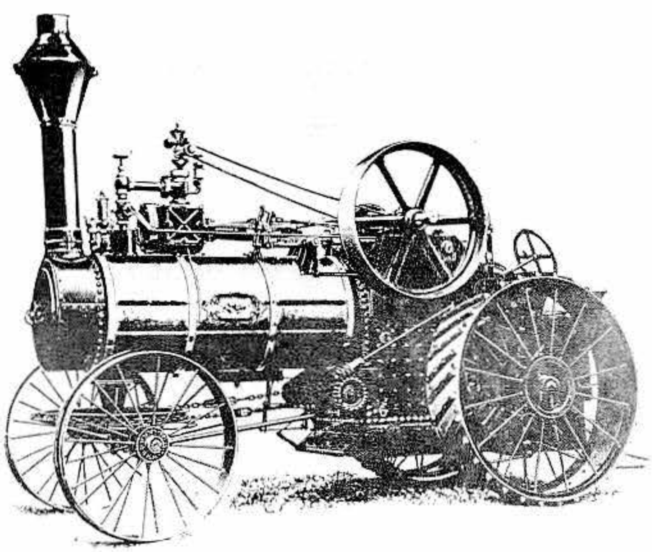
During the years of 1905 thru 1909, Morris built two steam traction engines of about 30 H.P. These were built in Milwaukee.



This 30 H.P. double cylinder rear mounted special plow steam traction engine was built in 1907 by George W. Morris Co., at Milwaukee. In 1896, George W. Morris had the J. I. Case Co., of Racine, Wis., built two, perhaps three steam traction engines. During the years of 1905 thru 1909, George W. Morris built two more steam traction engines of about 30 H.P.

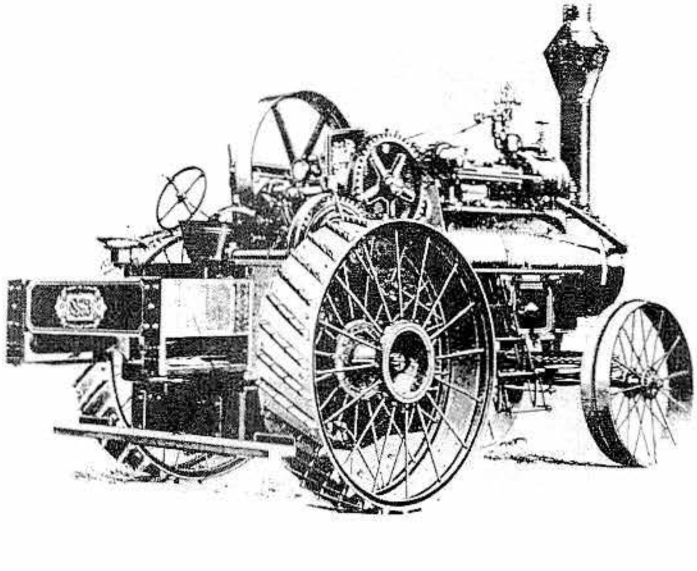
One of the last engines to be built by this firm was this 30 H.P. George W. Morris single cylinder, rear mounted steam traction engine, built in 1909. Late in 1897 George W. Morris went to work directly for Case as a design engineer, and on May 30, 1899, was granted U.S. patent # 626, 027. This patent was for a method of mounting the gearing of traction engines. It was assigned to J. I. Case Threshing Machine Co. of Racine, Wis., and was used on all steam traction engines built by Case thereafter.



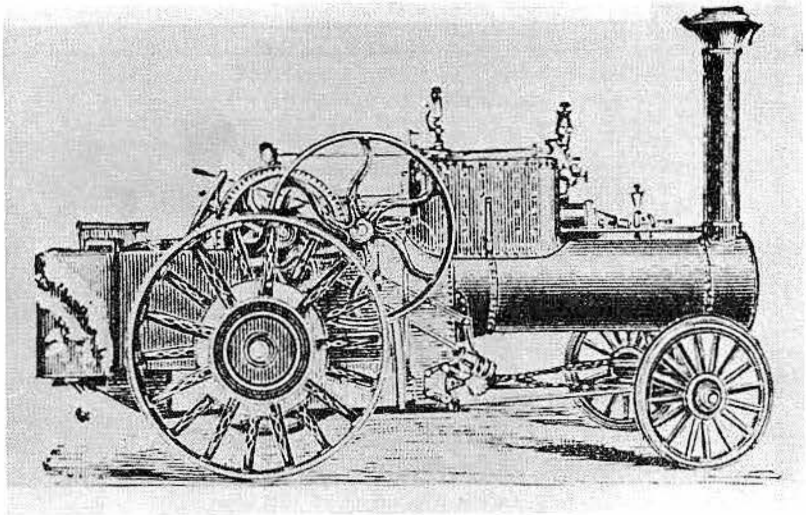


George W. Morris designed this 120 Brake H.P. steam traction engine. It was built in 1896-97 by J. I. Case Co., but sold under the name George W. Morris, Racine, Wis. At least two, perhaps more were built. One engine went to North Dakota and the other to a foreign country.

This is the rear view of at least two 120 B.H.P. George W. Morris steam traction engines, built in 1896-97 by J. I. Case Co. for the George W. Morris Co., Racine, Wis.



Muncy Traction Engine Co.

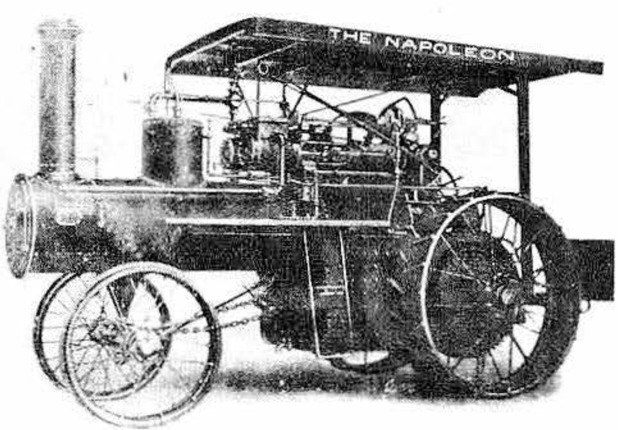


A Muncy steam traction engine was built by Muncy Traction Engine Co., of Muncy, Pa., about 1890. Mr. Larzelere moved to Muncy, in 1887, and with the help of a Mr. Brocious, started the Muncy Steam Traction Engine Co. The Muncy Co., was apparently unsuccessful. Mr. Larzelere spent his later years with A. B. Farquhar Co., of York, Pa., selling and installing sawmill outfits. There is very little information available about these engines, and this early engraving is the only illustration that could be found of a Muncy. It had a surprisingly huge steam dome for its size, but otherwise appears to be of rather acceptable and conventional design.

Mr. Larzelere was a mechanical engineer born in Willow Grove, Pennsylvania. He moved to Greencastle in 1882, probably from Doylestown, Pennsylvania. In about 1887 he left the Twentieth Century Mfg. Co., and moved to Muncy, Pennsylvania. With the help of a Mr. Brocious he started the Muncy Traction Engine Company.

The Muncy Traction Engine Company, located on East Water near Main St., in Muncy, Pa. were manufacturers of traction engines; portable and stationary engines; boilers; sawmills, and other farm machinery. The Muncy Company was apparently unsuccessful. Mr. Larzelere spent his later years with A. B. Farquhar Co. of York, Pennsylvania, selling and installing sawmill outfits.

Napoleon Mfg. Co.



This Napoleon steam traction engine is a double cylinder 16-18 H.P. built in about 1906. This engine was built by the Morningstar Manufacturing Co., of Napoleon, Ohio. The company built single and double-geared engines, with steel or cast wheels. The Morningstar Manufacturing Co., later changed its name to Napoleon Mfg. Co., but apparently never was a major factor in the steam engine field.

The Morningstar Manufacturing Co. of Napoleon, Ohio was organized in 1892 by R. W. Cahill and A. B. Blank, who continued the business as a private enterprise until 1902, when a company was incorporated under the laws of Ohio for the manufacture of various kinds of machinery and mechanical devices, all of which appear to have found ready sale. Under wise and judicious management, the business during the ensuing ten years prospered to the satisfaction of all parties concerned. But on the first day of January, 1904, the building caught fire and before the flames could be checked the entire plant and contents, including much unfinished work, was a mass of ruins. The fire department had been almost helpless, owing to the freezing of the water mains.

Immediately after the disaster, the company proceeded to rebuild, but on a much larger scale then formerly. The new factory, when finished and ready for occupancy, was one of the largest and most complete manufacturing plants in the city. It was constructed of brick, covered a large area of ground near the Wabash Railroad and was well situated and admirably adapted to the purposes for which used. When finishing the new factory, the company introduced the manufacture of Napoleon steam traction engines, as well as threshing machines. The company was again incorporated in August, 1905, and the name changed to Napoleon Mfg. Co.

New Giant (Northwest Thresher Co.)

The New Giant steam traction engine was built by the Northwest Thresher Co. of Stillwater, Minnesota, which was founded in 1874.

The New Giant steam engines's cylindrical form of boiler commended itself to the practical engineer. The pressure was equal upon every point, doing away with the necessity of stay-bolts. This made the Giant the most durable boiler on the market, without exception, so the company said. The boiler was of steel, 60,000 pounds tensile strength to the square inch.

Eighteen horse and smaller boilers had shells 1/4-inch in thickness, main flues of 5/16-inch, flue sheets of 3/8-inch, and sheet for the dome of 3/8-inch. Twenty-horse and larger boilers had a shell of 5/16-inch, main flues of 3/8-inch, flue sheet of 7/16-inch.

In the 25-horse simple and 30-horse compound boilers, which carried 150 lbs. pressure, the main flue was made in three sections, the center section being 13/32-inch thick and the two end sections, 3/8-inch.

Every boiler was tested by regularly appointed state boiler inspector.

The company made no extra charge for jacketing. The jacket of the New Giant had an extra covering of Russia iron, which made it indestructible, and gave it a fine finish. This prevented the condensation of steam in cold weather, and added to the durability of the boiler.

When burning straw, there was to the rear of the grate rest an 8-inch dead plate, which was to be used at all times when straw was used. For burning coal or wood, regular coal grates were used. All the engines underwent a cold water test of 50% greater pressure than the maximum steam pressure to be used. That is, boilers carrying 150 lbs. steam were tested at 225 lbs. cold water pressure.

The engines were fired and steamed up four consecutive days to the maximum steam pressure they were designed to carry, subject the whole time to state boiler inspection. This was done for the two-fold purpose of discovering and removing any leakage that may develop, and to permit thorough inspection by the state authorities.

The combustion chamber in the New Giant engine, at the front end of the boiler, was of large capacity, being 17 inches in length, and of the same diameter as the boiler. It was lined with heavy ribbed iron plates, preserving the shell from the flame. The flue sheet above the water line was protected by the top plate or lining, carefully adjusted. Brass goods and trimmings used on the engines were of the best quality.

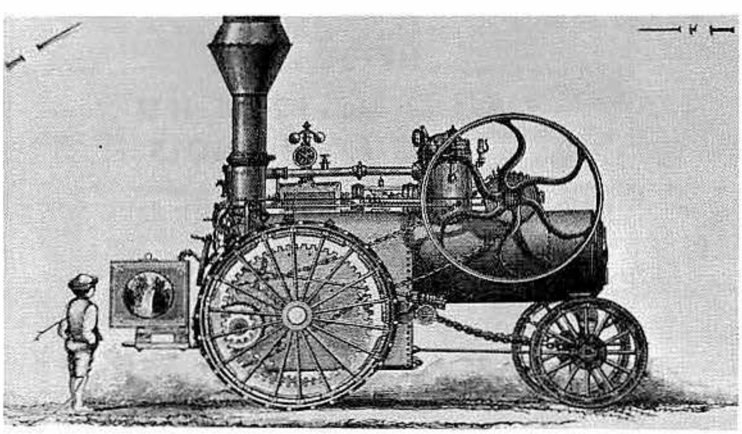
A sight feed lubricator was furnished with every engine, as were solid oil cups for all bearings. Also, solid oil (grease) of the best quality was provided. Also furnished were small tools, poker, scraper, flue cleaner, combination wrench, cast wrenches, cold chisel, oil cans, packing, and a funnel for filling the boiler.

A canopy top, either short or full size, was furnished when specially ordered at an extra price. It was built of heavy galvanized iron, on a solid hardwood frame.

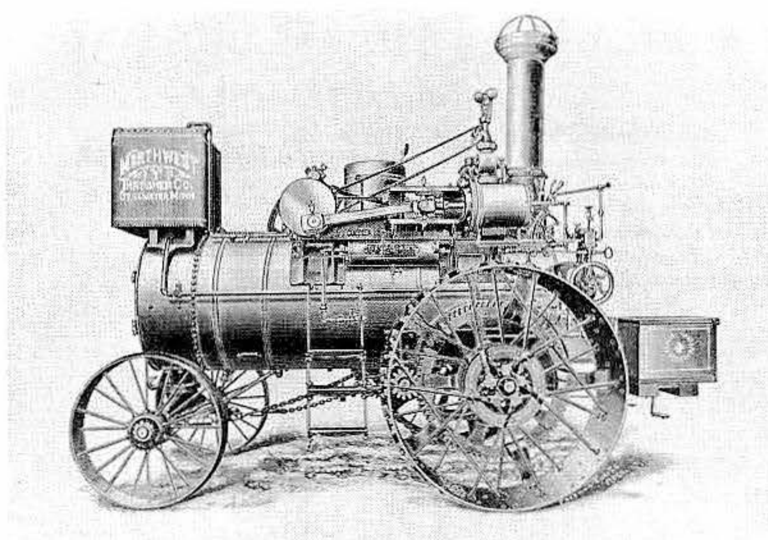
A special safety plug at the forward end of the crown sheet was fitted in the end of a large plug in such manner that the soft metal became exposed while there was still two inches of water over the crown sheet, thus assuring absolute safety.

The New Giant steam traction engine used the Woolf valve gear and the compound engines used the Woolf Compound cylinder and valve.

The Northwest Thresher Co. made the following: Steam traction engines, return flue and locomotive types, single and compound engines, the Northwest separator, and water wagons.

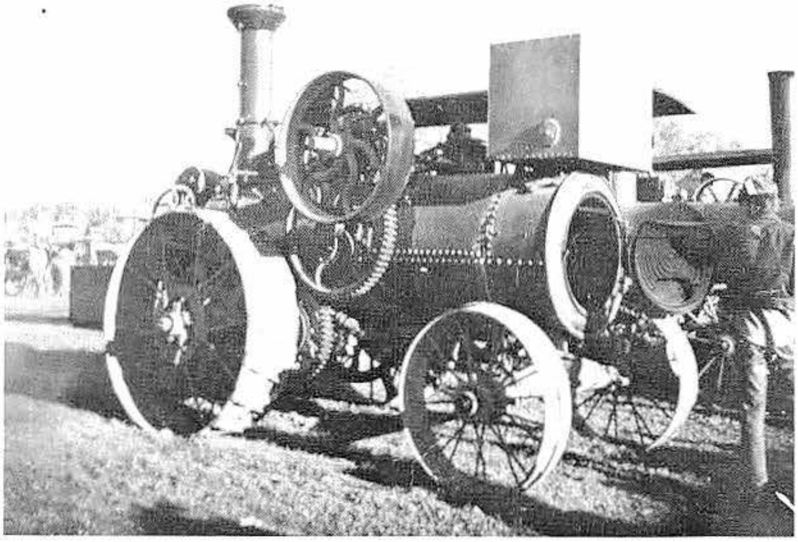


One of the first products of the Northwest Thresher Co. of Stillwater, Minn., was this steam traction engine built in 1887. The engine went under the name of the "Stillwater Engine." Later variations of this return flue design were marketed under the name "New Giant," while the straight flue engines bore the name "Northwest." The Northwest Thresher Co. was founded in 1874. This engine uses an exceedingly large flywheel. Its power transmission from crankshaft to wheels was via a rather long chain connected to the rear-mounted bull gear.

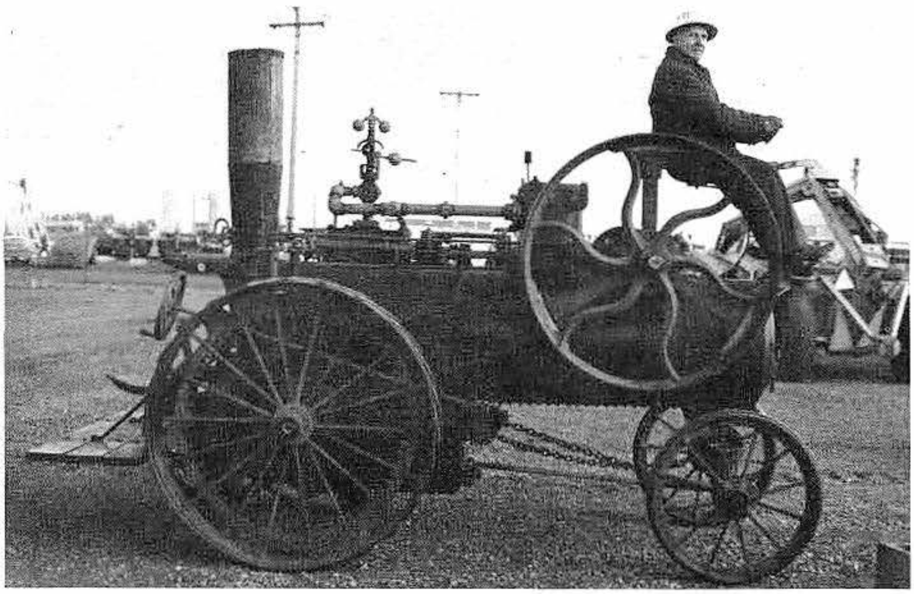


This New Giant steam traction engine was built in 1903 by Northwest Thresher Co. This engine has a return flue boiler. Every boiler that this company made was tested by a regularly appointed state boiler inspector. In all the return flue boilers, the flues were $2\frac{1}{2}$-inch diameter while in the straight boilers 2-inch flues were used. This engine used the Shelby seamless flues.

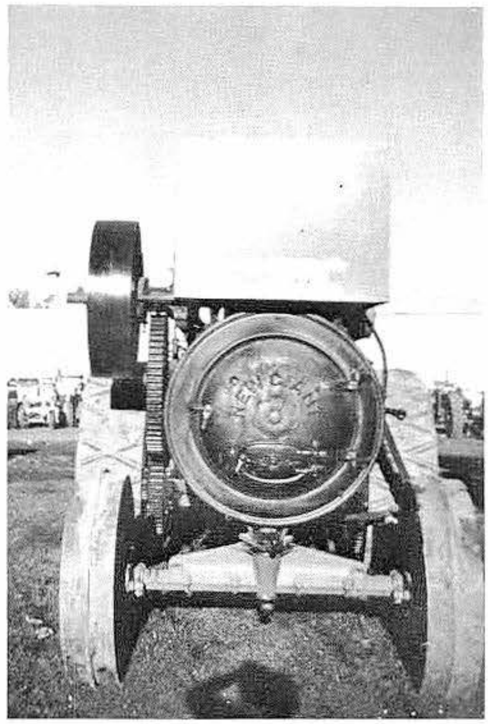
New Giant (Northwest Thresher Co.)



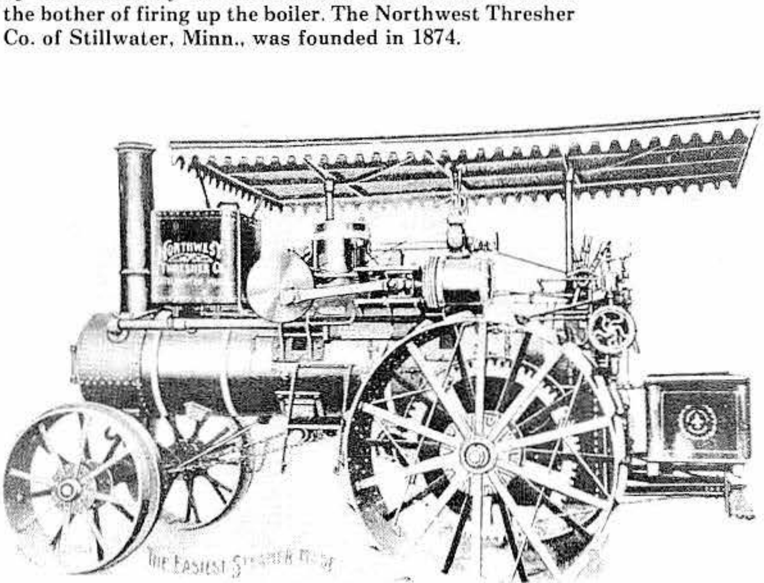
Milo Mathews of Mount Union, Iowa, cleans the flues of his 20 H.P. New Giant return flue steam traction engine. The scene took place at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa. Milo's engine was built in 1902. Simple return flue engines of this type used the Woolf valve gear, while the New Giant compounds used the Woolf compound cylinder and valve. Flue cleaning, one of the more tedious chores of maintaining steam traction engines, is a very necessary activity. If not cleaned, the flues will clog with soot and carbon. This greatly reduces heating capacity and draft, while increasing fuel consumption. New Giant also produced the Northwest separator with self-feeder and windstacker.



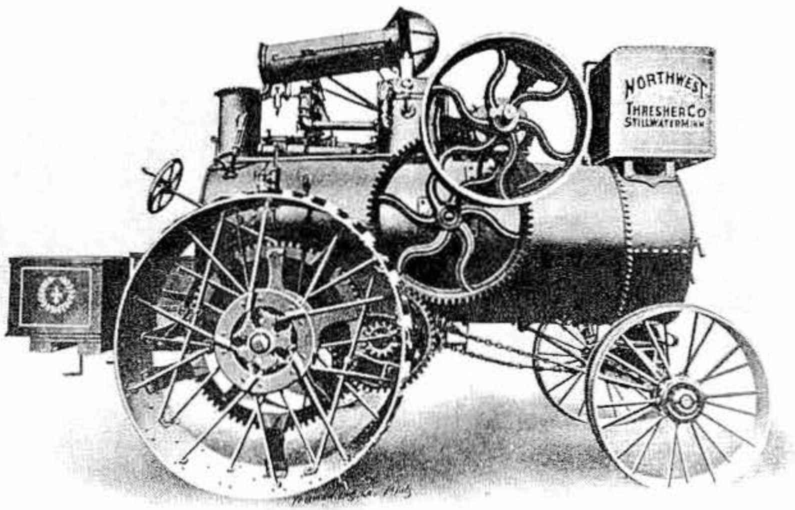
This is the fly wheel side of a 10 H.P. New Giant return flue steam traction engine built in 1889. It is owned by the Reynolds Museum, Wetaskiwin, Alberta, Canada. The engine is chain driven. The seat up front is for pulling it by horses,usually for short moves that did not warrant the bother of firing up the boiler. The Northwest Thresher Co. of Stillwater, Minn., was founded in 1874.



Seen from head-on, Milo Mathews, 20 H.P. New Giant is a rather unusual looking engine. The large box on top of the front combustion chamber is the water tank. This view also gives a good indication of the width of the drive gears and the belt pulley on the crankshaft. This engine began its life as a straw burner threshing grain in Nebraska. Later it was converted to a coal burner. This engine was shipped to Oscar Nelson at Utica, Nebraska in 1902. It was bought at the Oscar Nelson estate sale August, 1950 and made its first appearance at the Midwest Old Settlers & Threshers Assn. show in 1951. Its cylinder has an $8\frac{1}{4}$-inch bore and 10-inch stroke. With 100 lbs. of working steam pressure, it will produce 250 RPMs on the belt and run at $2\frac{1}{2}$ miles-per-hour.

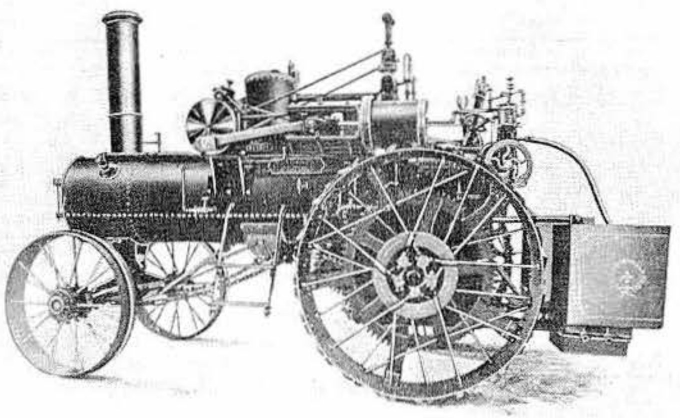


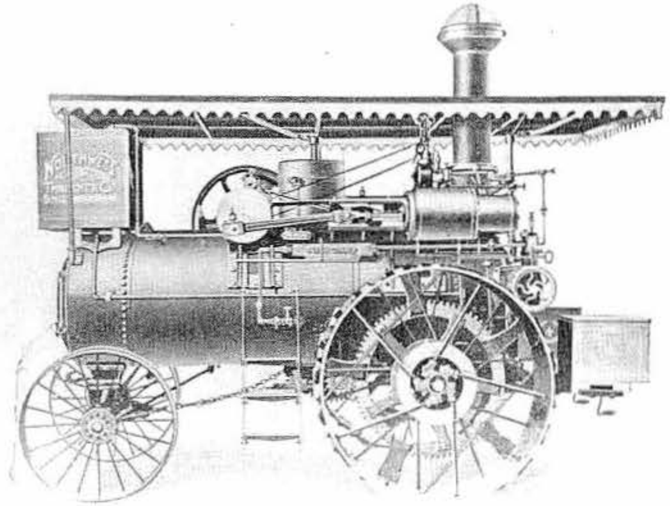
Produced in 1907 was this Northwest steam traction engine. This engine used the straight flue fire-box boiler. At the forward end of the crown sheet was located a safety plug. This plug fitted in the end of a large plug in such a manner that the soft metal became exposed while there was still two inches of water over the crown sheet, thus assuring absolute safety. Northwest Thresher Co. produced straight flue engines under the "Northwest" name and return flue engines under the "New Giant" name.



This is the flywheel side of the 1903 return flue New Giant steam traction engine. This engine's combustion chamber, at the front end of the boiler, was of large capacity, being 17 inches in length, and of the same diameter as the boiler. It was lined with heavy ribbed iron plates, preserving the shell from the flame.

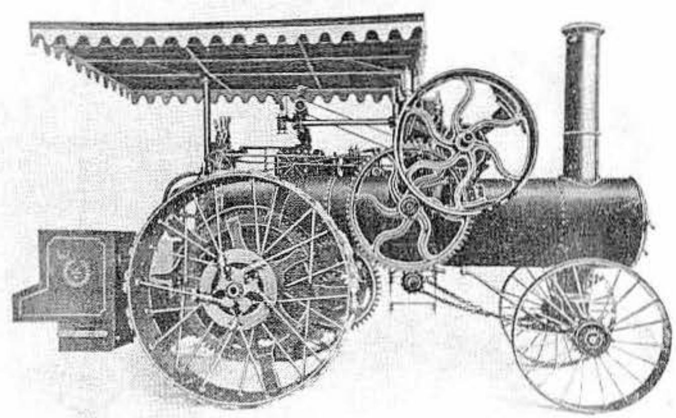
The Northwest steam traction engine of 1903 used the straight flue fire-box boiler. Around the fire-box a sufficient number of stay bolts were provided to make the boiler the strongest fire-box boiler on the market.



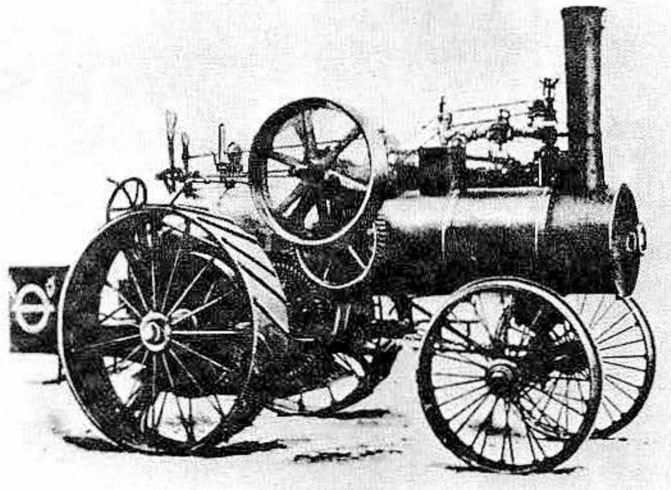


Produced in 1903 was this New Giant compound cylinder engine. This engine is a return flue boiler. The engine used the Woolf compound cylinder and valve. A canopy top either short or full size was furnished when ordered as an extra. It was built of heavy galvanized iron, on a solid hardwood frame.

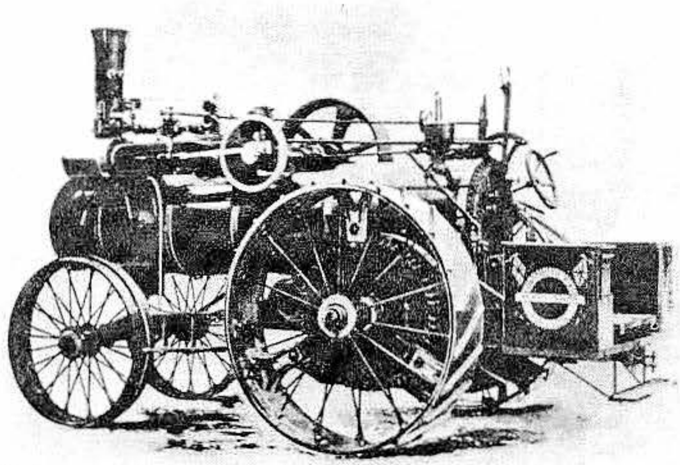
Northwest Thresher Co. claimed that the easiest steamer made in 1903 was the Northwest steam traction engine. This engine used the straight flue fire-box boiler. The smoke-box was 25 inches long and 30 inches in diameter, and designed for perfect combustion. Every boiler was thoroughly tested. The seams were riveted.



New Hamburg Mfg. Co.



The New Hamburg steam traction engines were built in eastern Ontario until 1917 when the firm made the mistake of going into the Canadian West without a branch at Winnipeg, Saskatoon or Calgary to furnish parts and service. The Company folded in 1918. This is the flywheel side of a 1917 model.



This is one of the last of the New Hamburg steam traction engines. All the traction engines were of the side-mounted type with the boiler mounted on springs placed on top of the axle and between axle brackets. Only simple engines were built and all had the Woolf single eccentric reverse gear, Gardner spring governor and expanding friction clutch with three large wooded shoes. This is the cylinder side.

Samuel Merner, a native of Switzerland, moved to New Hamburg, Ontario, in 1838. He was a blacksmith by trade and immediately set up a shop where his busy anvil shaped out pioneer tools needed for clearing the land and building homes. Merner's shop grew, and from it came the agricultural implements required as the country developed. Simson Merner carried on his father's business and extended it to include tread-power, horse powers and a threshing machine that was little more than a cylinder.

In the early 1890s Werner Brodrecht joined young Merner and they began building a separator designed by John Beam of Baden, Ontario. About this time another Merner relative left the employ of the Waterloo Mfg. Company and came to them, bringing with him his knowledge of the manufacture of steam engines. In a few years the men were turning out limited numbers of a very efficient portable engines and separators.

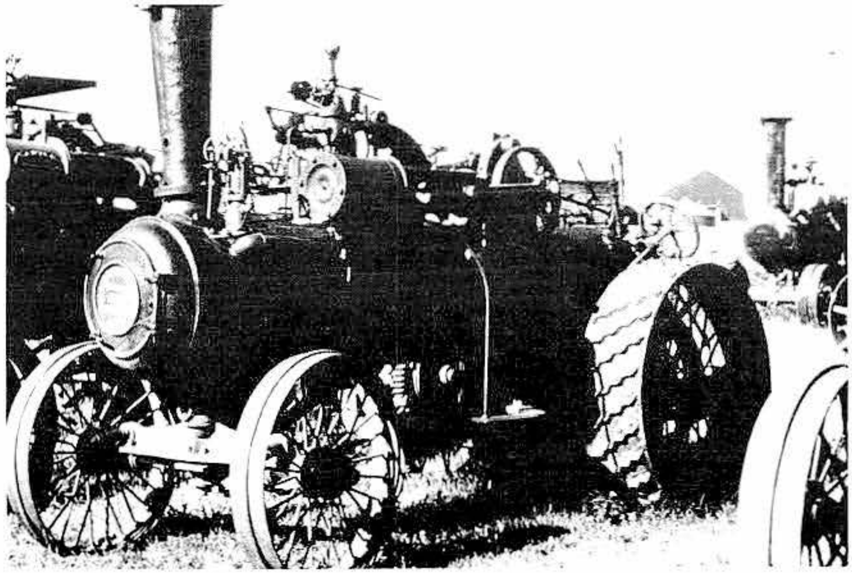
A group of local businessmen, seeing the excellent prospects for such an industry, came to their aid financially and, in 1897, organized as the New Hamburg Manufacturing Company. The firm began the manufacture of "Hamburg" portable and traction engines, separators and attachments exclusively.

The plant was badly damaged by fire in 1901, but the prospect of expanding markets with the opening up of the Canadian West induced the company to rebuild and enlarge the factory.

All the traction engines were of the sidemounted type, with the boiler mounted on springs placed on top of the axle and between axle brackets. Only simple engines were built and all had the Woolf single eccentric reverse gear, Gardner spring governor and expanding friction clutch with three large wooden shoes.

The company also built two types of separators, the "Ontario Chief" for the Eastern market and the "Prairie Chief" (a heavier machine) for Western Canada.

No records exist as to the number of engines and separators that were built, but it is well known that the coveted Western market was the undoing of the company. The machines were built, shipped and sold, but collections were slow and too often bad, forcing the New Hamburg Manufacturing Company to close down in 1917. Later, The Dominion Thresher Company was formed to try to revive the business but the day of the steam threshing engine was drawing to a close and the new company shut down in the early 1920s, writing "finis" to the Hamburg threshing machinery which had grown up with and served its community well, but lost out to a more modern source of farm power.



This 25 H.P. New Hamburg steam traction engine was built by New Hamburg Mfg. Co. of New Hamburg, Ontario, in 1918. This engine is owned by Western Development Museum of Saskatoon, Saskatchewan. Samuel Merner, a native of Switzerland, moved to New Hamburg in 1838. He was the founder of the New Hamburg Mfg. Co.

Nichols & Shepard Co.

John Nichols started a blacksmith shop in 1848, in Battle Creek, Mich. In the early 1850s, with only blacksmith tools, he built his first thresher. Crude as it was, it was the best thresher that had been built at that time. In 1886 Nichols & Shepard Company was established and in 1902 developed the first machine in which were combined the famous "Four Threshermen," the big cylinder, the men behind the gun, the steel winged beater, and the beating shakers.

John Nichols had reason to believe a small foundry would prove profitable. In the early 1850s, with the aid of David Shepard to share the additional financial and business duties, a small foundry was added to the smith shop. Some of the early products were agricultural implements, mill irons, and small stationary steam engines.

The year 1886 saw the firm re-incorporated as the Nichols & Shepard Company. It had now grown to be one of the larger builders of threshing machinery in this country, being capitalized for a million dollars. Also came the first of the new threshing machines, which were known as the "Flagg" vibrator, having been designed by Eli Flagg, one of their threshing machine experts.

Edwin C. Nichols became president of the company when his father passed away in 1891 at the age of 77.

David Shepard passed away in 1904 at the age of 84, having been vice-president of the company till then.

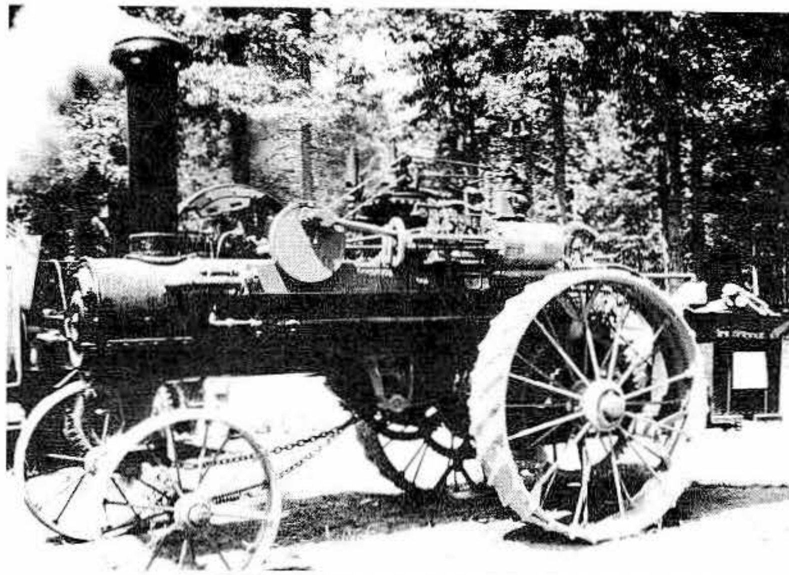
The Nichols & Shepard steam traction engines had the most substantial boiler made, with the thickest boiler plate used in traction engine construction. It steamed easily and had ample steam capacity for its engine. It had steel traction wheels, platform frame, and draw bar. It had an extra large main shaft and counter shaft. The extra large main and counter shaft boxes were arranged for thorough lubrication.

Extra large brackets were strongly attached to the boiler. Each engine was thoroughly tested to twice its nominal horse-power. All the actuating levers and vital working parts were immediately under the hand of the engineer. The throttle, reverse, and friction levers, and the steering gear were handy in their natural places for prompt action.

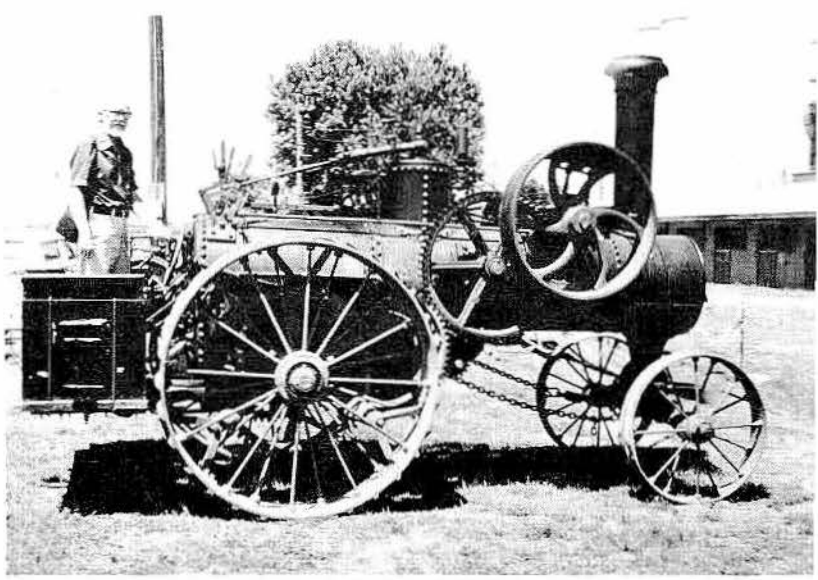
The steam gauge and water gauge glasses were in plain sight of the fireman and engineer. The injector and pump valves as well as lubricator and governor advance were within easy reach.

The Nichols & Shepard Co. made the following: steam traction engines of double cylinder and single cylinder, adapted to coal, wood, or straw; the Red River special threshing machines; rice threshers; alfalfa and small seeds threshers; mounted water tanks; low down tank pumps, and Nichols-Shepard all-steel frame horse powers.

The Nichols & Shepard Co. of Battle Creek became part of the Oliver Farm Equipment Co. in 1929. Today the Oliver Corp. is part of the White Motor Corp., with its home office in Cleveland, Ohio.

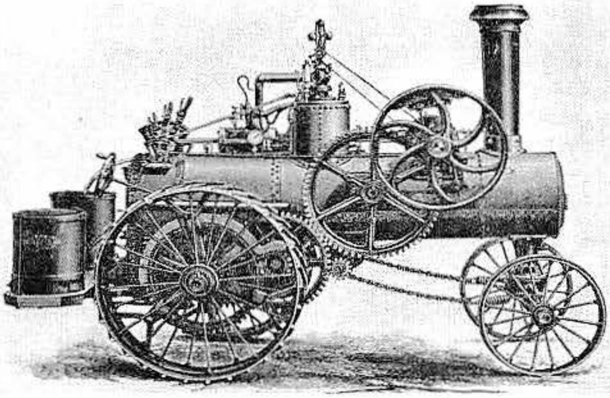


This 8 H.P. Nichols-Shepard steam traction engine was built by the Nichols & Shepard Co. of Battle Creek, Mich., in 1900. This engine is owned by Pete Lovelace of Wye Mills, Md., and is steaming away at the Tuckahoe Steam & Gas Assn. show at Easton, Md. The engine is No. 1895. It weighs 6 tons, and will go 3 MPH at 250 RPM. It has the Stevenson link valve gear. The engine cost $900 new.

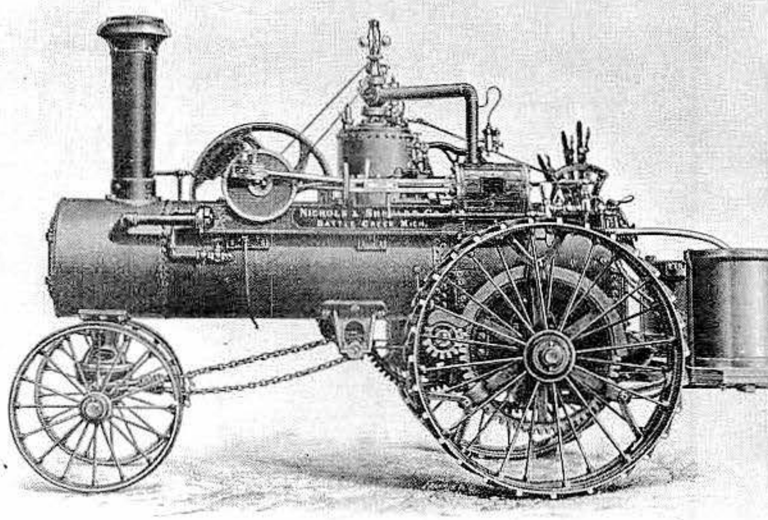


This is the flywheel side of the 8 H.P. Nichols-Shepard engine owned by Pete Lovelace of Wye Mills, Md. It is in action at the Delaware State Fair Antique Machinery show at Harrington, Del. At the wheel is the author's father, O. E. Norbeck, a retired YMCA general secretary with 32 years of service. He is an author of several books on the American Indian.

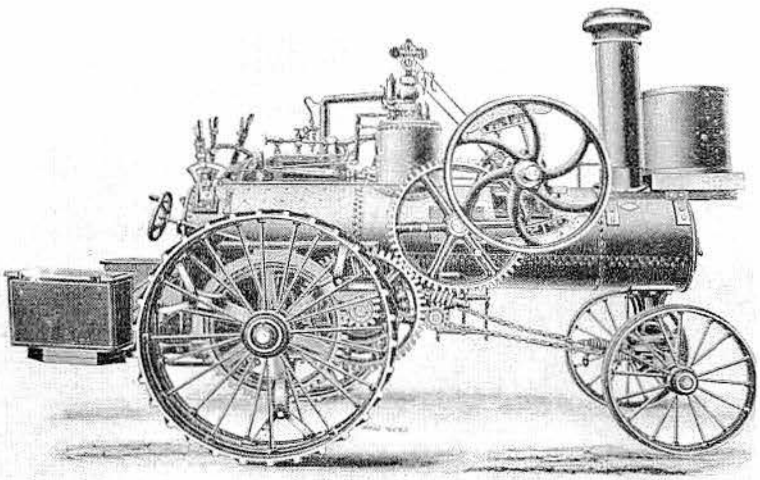
Nichols & Shepard Co.



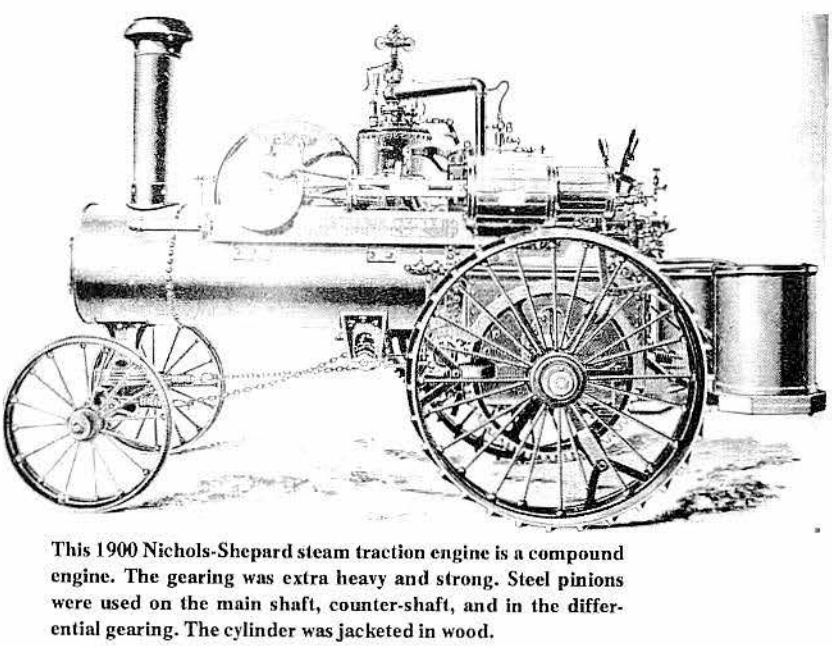
This is the flywheel side of the 1900 Nichols-Shepard steam traction engine. Only the best selected steel was used in the construction of the boiler. It was provided with all approved safety appliances, including a double riveted boiler, double thick flue sheet, sloping crown sheet, patent "pop" safety-valve, glass water gauge, and fusible safety plug in crown sheet.



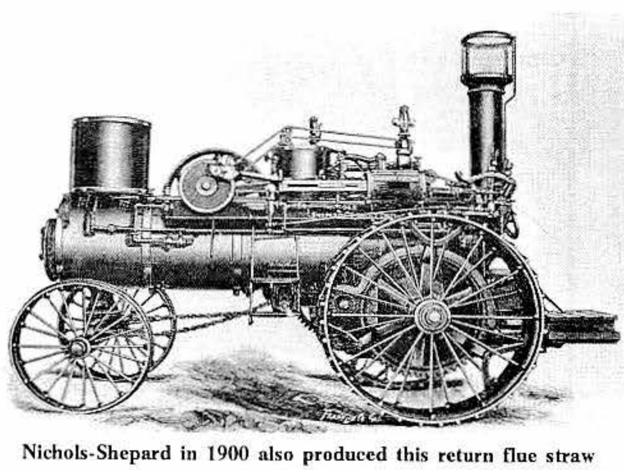
This is the cylinder side of a 1900 Nichols-Shepard simple steam engine. The cylinder on this engine faces the driver, with the piston running forward to a front-mounted crankshaft. The ball governor on top of the steam dome is at the same height as the top of the smokestack. The Nichols & Shephard Company had its formation in 1848, when John Nichols opened his first blacksmith shop. By the early 1850s, Nichols was producing his own threshers. The actual Nichols & Shepard Company was established at Battle Creek, Mich., in 1886.



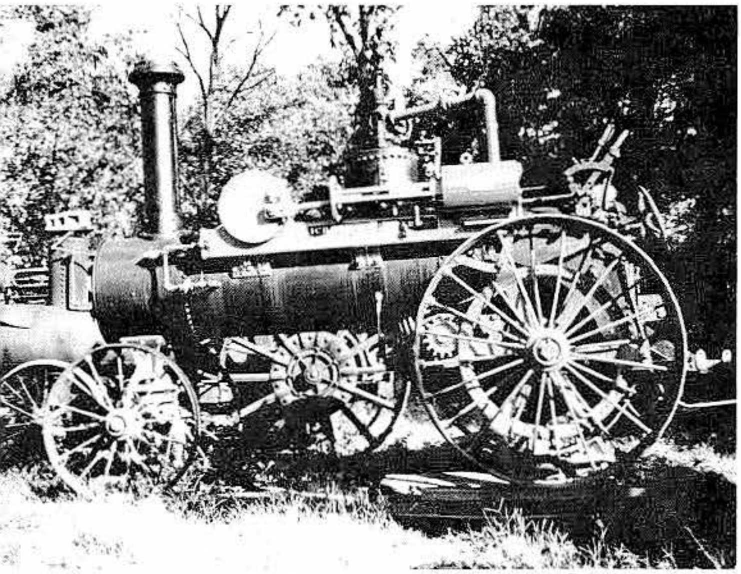
This 1900 Nichols-Shepard steam traction engine is equipped with steel water tank in front and tool boxes on the platform. This engine in general design, was of the locomotive style. Note the clutch shoes inside of the flywheel.



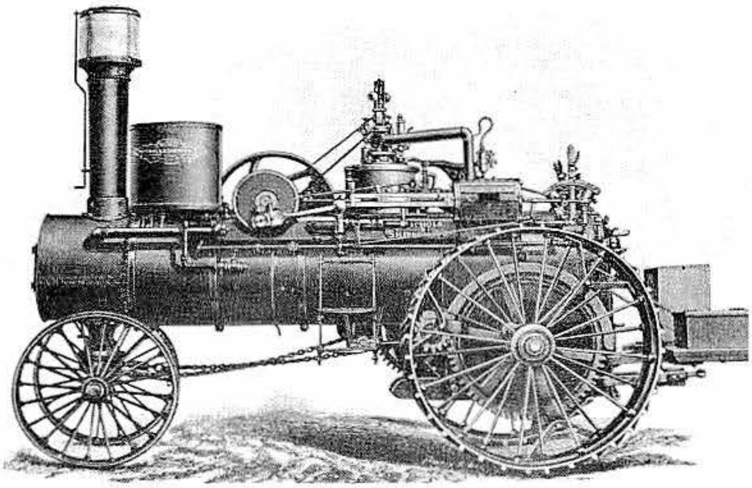
This 1900 Nichols-Shepard steam traction engine is a compound engine. The gearing was extra heavy and strong. Steel pinions were used on the main shaft, counter-shaft, and in the differential gearing. The cylinder was jacketed in wood.



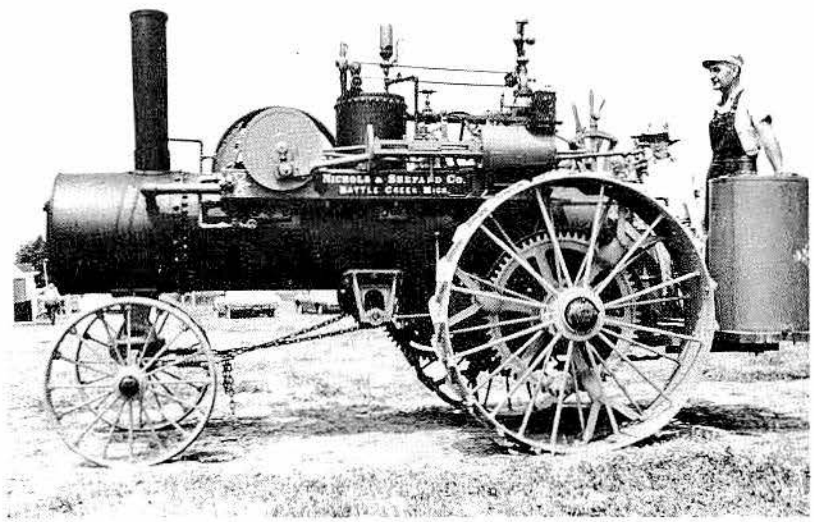
Nichols-Shepard in 1900 also produced this return flue straw burner. The combustion chamber in the front end was surrounded with water on the top, bottom, and sides. At each end of this boiler was a door, for ready access to the flues for cleaning or inspection.



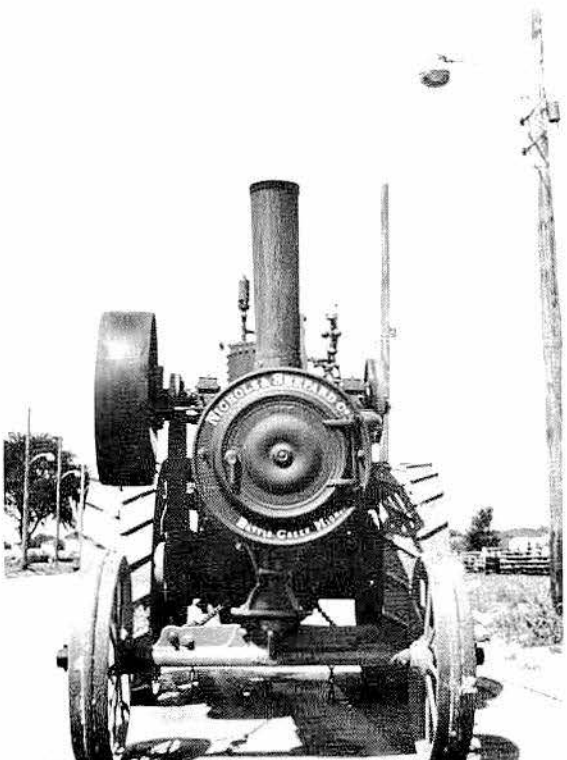
This 10 H.P. Nichols-Shepard steam traction engine, built in 1890, is owned by Samuel Osborn of New Oxford, Pa. Osborn is working on a New Geiser museum, which will be at his residence near New Oxford.



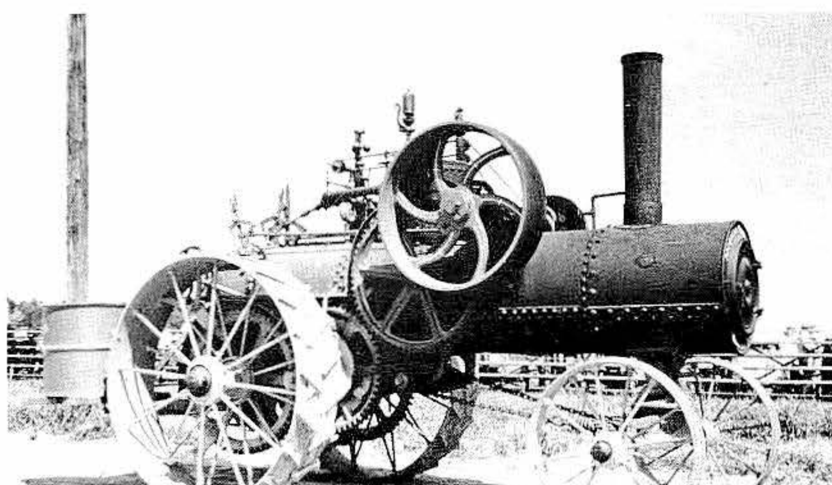
This 1900 Nichols-Shepard is a direct flue simple straw burner. The simple engines were made in 8, 10, 13, 16, and 20 H.P. sizes, while the compounds were 13, 16, and 20 H.P. The straw burners were made in 18, 20, 22 and 25 H.P. in simple form and 20 and 26 H.P. in compound.



This 13 H.P. Nichols-Shepard steam traction engine, built in 1900, is owned by Paul Hahn of Westminster, Md. Paul is running his engine at the Early American Steam Engine Society show at Stewartstown, Pa.

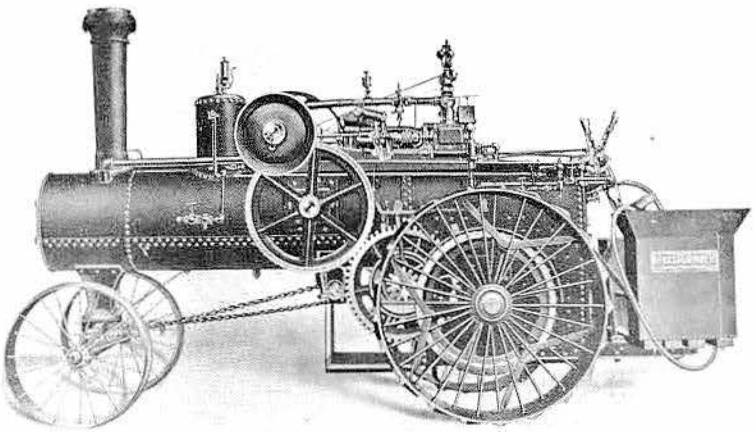


From the front, Paul Hahn's 13 H.P. Nichols-Shepard presents a very nice appearance—a conventional appearance that one expects to see when meeting such an engine. The pulley-flywheel on this engine was of substantial size. The producer of this engine was the Nichols & Shepard Co., but the engines themselves were called "Nichols-Shepard."

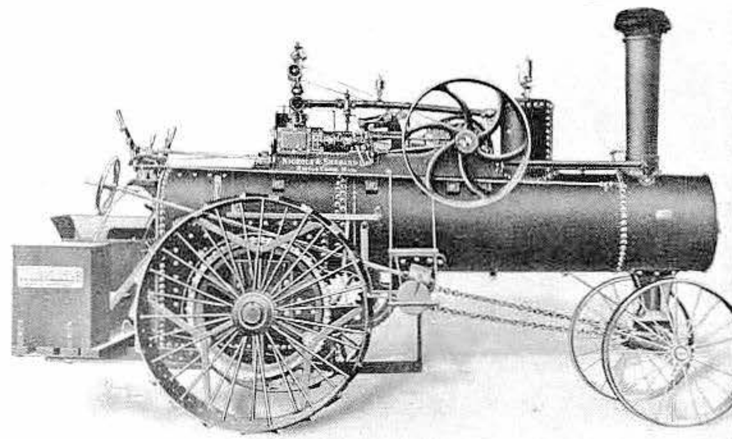


This is the flywheel or pulley side of Paul Hahn's 1900 model Nichols-Shepard. The 13 H.P. engine was of conventional locomotive style, with a simple cylinder, and a geared drive train. Nichols & Shepard built a substantial series of engines, many of which remain operational today.

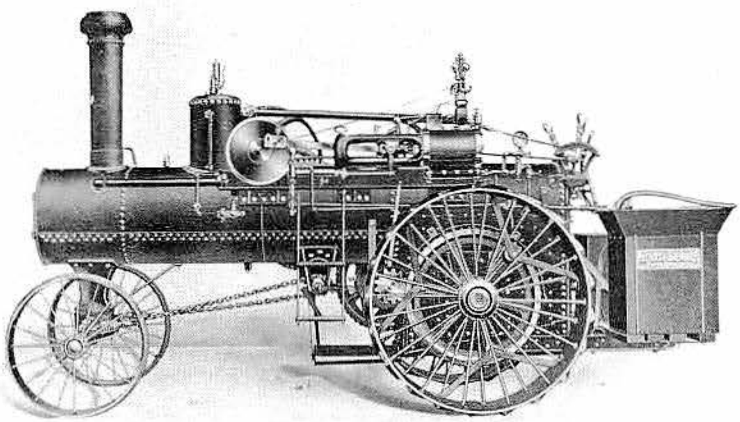
Nichols & Shepard Co.



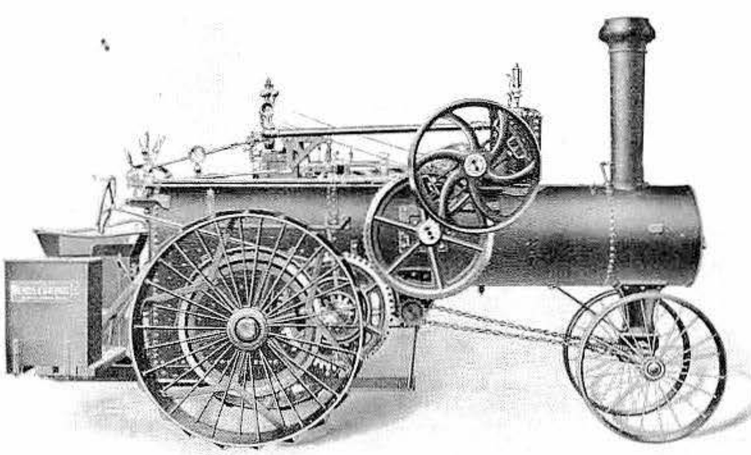
This is the gear side of the 1908 Nichols-Shepard double cylinder engine. This engine could be fired with coal or wood, and was also adaptable to straw burning. All controls and the steam gauge and water glass were in plain view of the fireman and engineer. The company recommended that two men operate this machine.



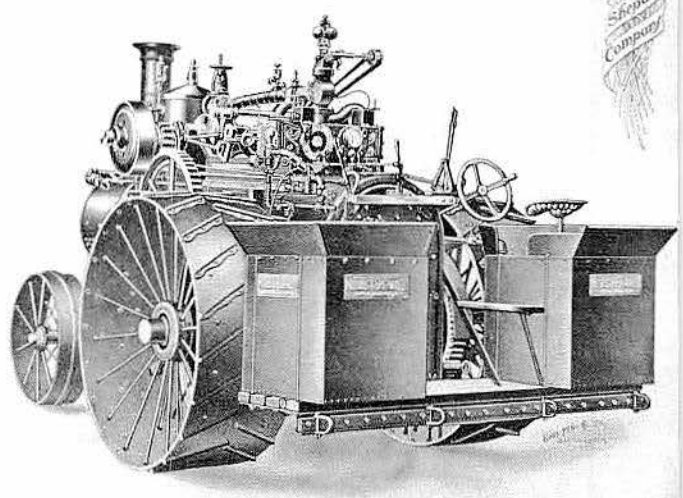
In 1908 Nichols-Shepard offered this double cylinder steam traction engine in 16, 20, 25, 30 and 35 H.P. sizes. The engine used steel traction wheels and a steel frame and draw bar rather than the cast iron units used by many other manufacturers. It had an extra large main shaft and countershaft and shaft boxes. Unlike most engines, the flywheel side contained only the combination belt pulley and flywheel, with the drive gears being on the opposite side.



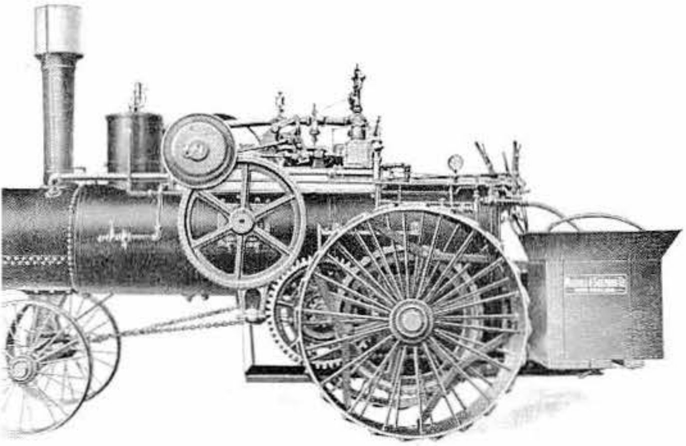
In 1908 Nichols-Shepard offered this single cylinder engine. This engine could be adapted to coal, wood or straw. It was made in 13, 16, 20, 25, and 30 H.P. sizes. This engine was fitted with cross head pump and injector, oil pump for cylinder lubrication, and oil cups for lubricating bearings and gears.



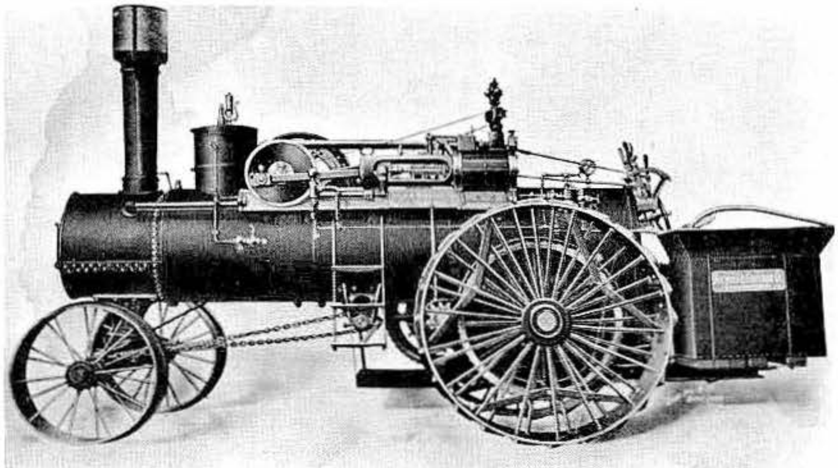
This is the flywheel side of the 1908 Nichols-Shepard single cylinder engine. All the actuating levers and vital working parts were immediately under the hand of the engineer. The throttle, reverse, and friction levers, and the steering gear were in their natural places for prompt action.



This formidable machine is a 1908 Nichols-Shepard double cylinder plow engine. This gives a good view of the plow platform and extra large water tanks and coal bunkers. Extra strong steel and semi-steel gearing was used on these engines. This appears to be the 35 H.P. version.

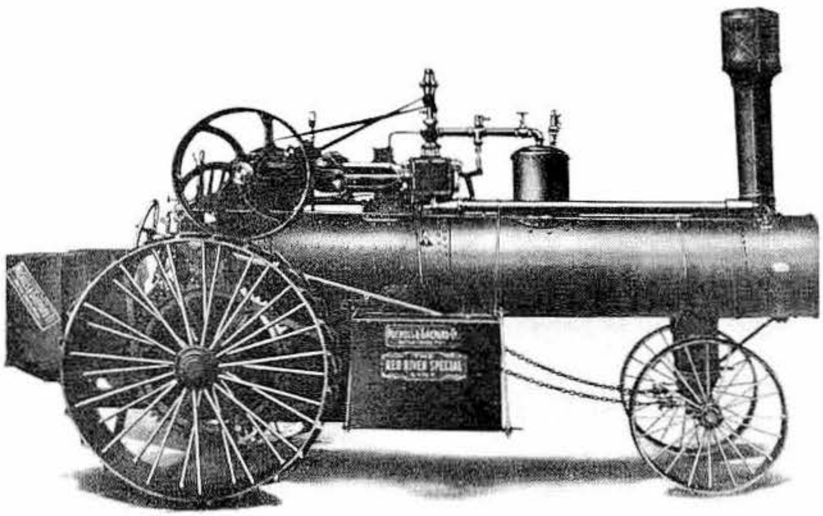


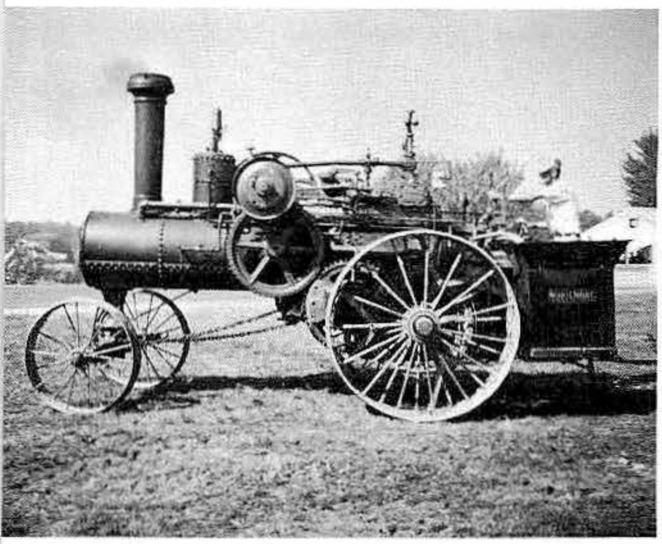
This is a 1908 Nichols-Shepard double cylinder straw burner engine. This engine was made in 20, 25, 30 and 35 H.P. sizes. The engine's governor was arranged so that the engine could be adjusted to run at a speed between 100 and 300 revolutions per minute.



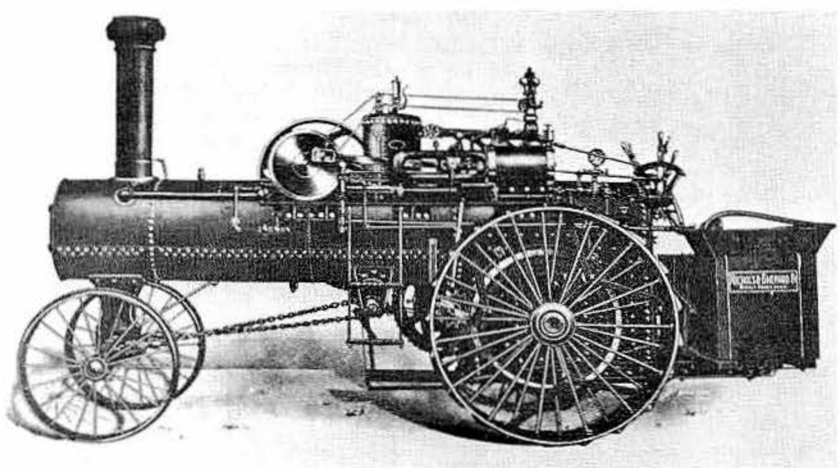
In 1908 Nichols-Shepard offered this single cylinder straw burner engine. The injector and governor speed were within easy reach. All these features were where the engineer could reach them from the platform.

This 1915 Nichols-Shepard is a rear-mounted plow engine. This engine was made in 16-60, 20-75, and 25-85 H.P. sizes. The rear-mounted engines were fastened to the boiler by the use of heavy steel flanges securely riveted to the boiler. No bolts went into the steam or water space.



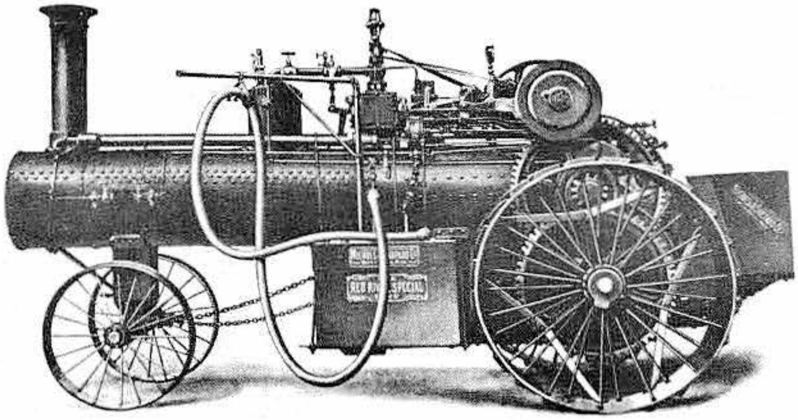


This 16-50 H.P. Nichols-Shepard steam traction engine, built in 1915, is owned by Mr. Neal of Easton, Md. It is running at the Eastern Shore Threshermen & Collectors Assn. show at Federalsburg, Md. The 16-50 H.P. figure related to belt and drawbar horsepower.

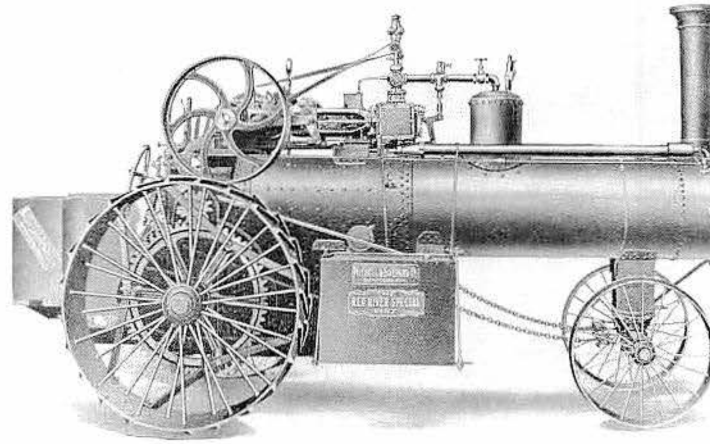


This is a 1915 Nichols-Shepard steam traction engine of single cylinder style. This engine could be adapted to coal, wood or straw. Its wheels had steel tires with wrought iron spokes riveted while red hot in the tires, and the molten metal in the hub was cast solid on the spokes.

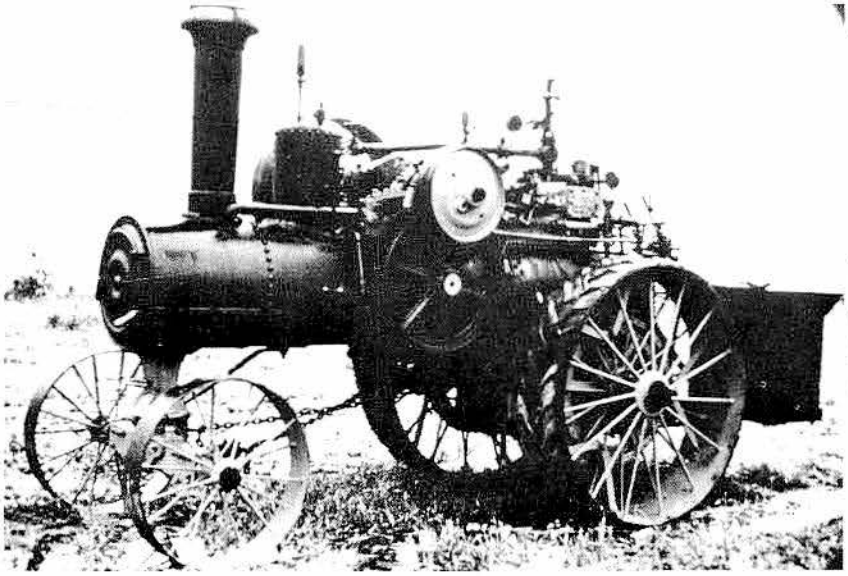
Nichols & Shepard Co.



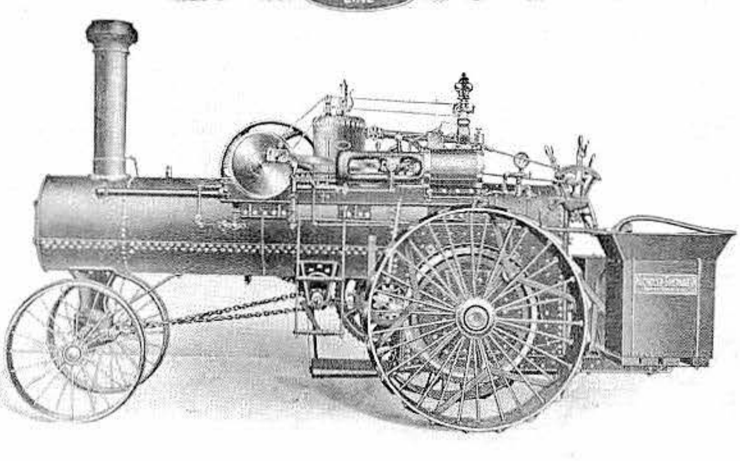
This is the gear side of the 1915 Nichols-Shepard rear-mounted plow engine. This view illustrates the convenience of taking water on the move. Nichols-Shepard now referred to all of its engines as the Red River Line.



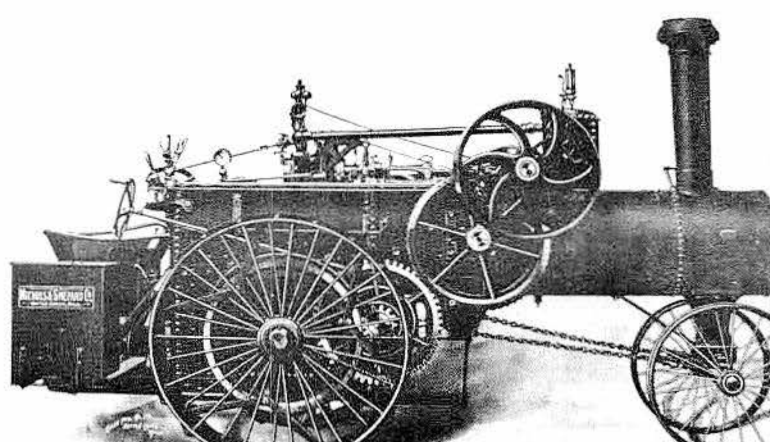
Designed to have maximum weight on the rear wheels was this 1920 Nichols-Shepard double cylinder, rear-mounted plow engine. The engine was available in 16-60, 20-75, and 25-90 H.P. sizes. The rear-mounted engines were fastened to the boiler by heavy steel flanges securely riveted to the boiler. As in earlier models, no bolts went into the steam or water space. This engine carried side water tanks in addition to the rear-mounted tanks.



One of the many remaining Nichols-Shepard engines is this 16 H.P. version. This is a double cylinder, center reverse mount, one of a multitude of designs produced by the Nichols & Shepard Co. during its many years of building engines. Surprisingly few Nichols-Shepard engines are shown with cabs, even though the company did offer canopy cabs as an accessory.

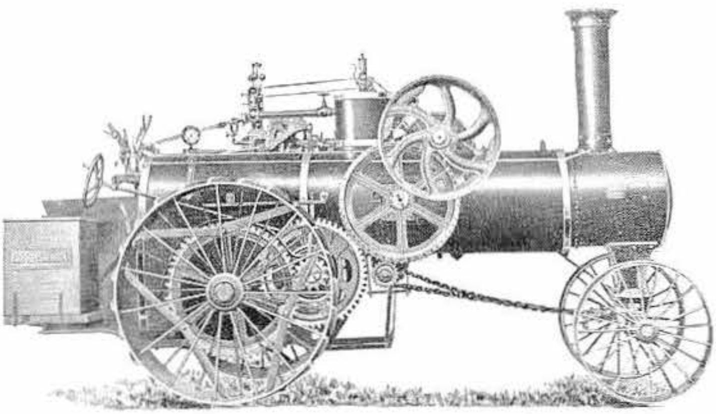


In 1920 Nichols-Shepard offered this single cylinder traction engine. It was built in 16-50, 20-70 and 25-85 H.P. versions, and could be ordered as a coal, wood, or straw burner. In this era, Nichols-Shepard continued to refer to its engines as the Red River Special Line.

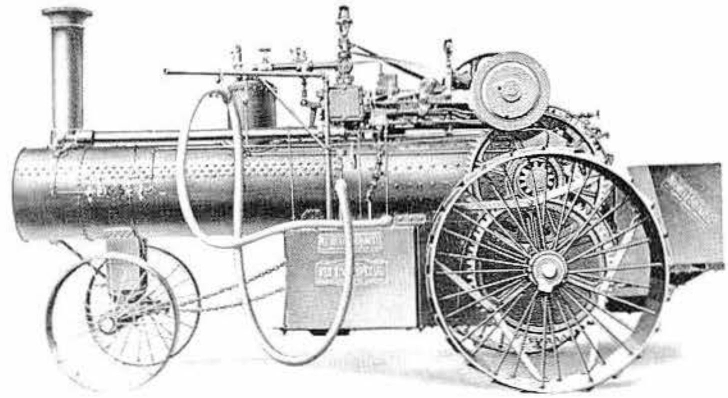


More conventional than the plow engine was this 1915 Nichols-Shepard single cylinder engine. This engine was also built in 15-50, 20-70, and 25-85 H.P. sizes. It was adapted to coal, wood or straw.

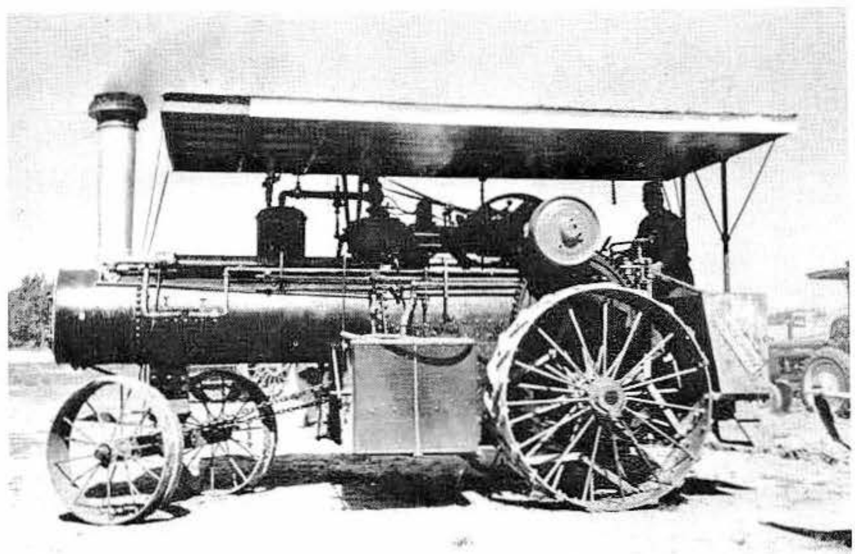
Nichols & Shepard Co.



This is the gear or flywheel side of the 1920 Nichols-Shepard single cylinder steam traction engine. This engine has been equipped with a jacketed boiler, and apparently was destined to be operated in a cold climate where such jacketing helped conserve heat and fuel. These engines were available in 16-50, 20-70 and 25-85 H.P. sizes.

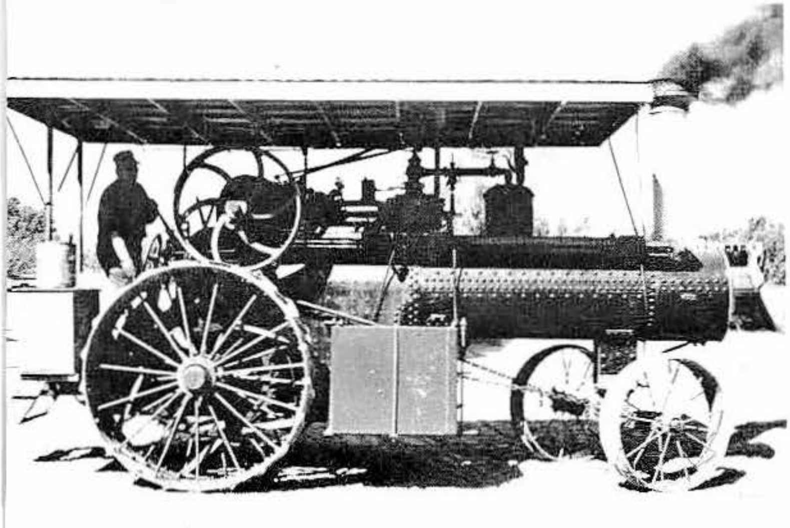


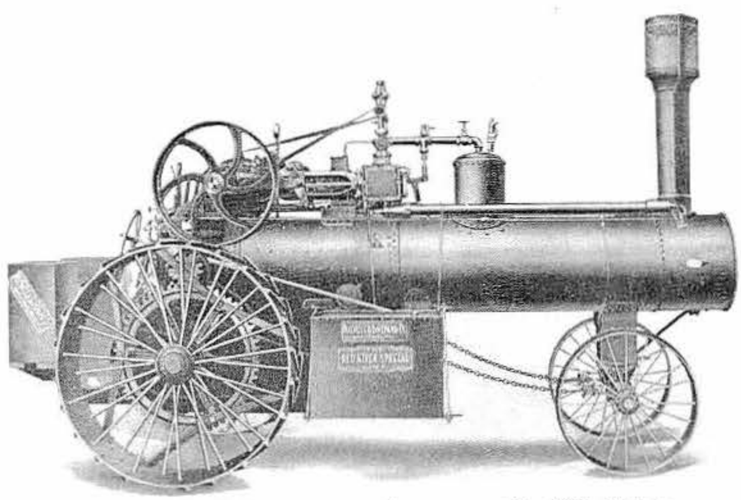
This is the gear side of the 1920 Nichols-Shepard double cylinder rear-mounted plow engine. This engine was made in 16-60, 20-75, and 25-90 H.P. sizes. This engine is equipped to take water on the move from the large auxiliary side tanks.



Laurel Runals of LaGrange, Ohio, demonstrates his 1924 double cylinder rear-mounted Nichols-Shepard at the Richland County Steam Threshers show at Mansfield, Ohio. This is the special plowing engine, with the majority of the weight concentrated on the rear wheels for maximum traction. Mr. Runal's engine is unusual in that it is one of the few Nichols-Shepards with a full canopy cab.

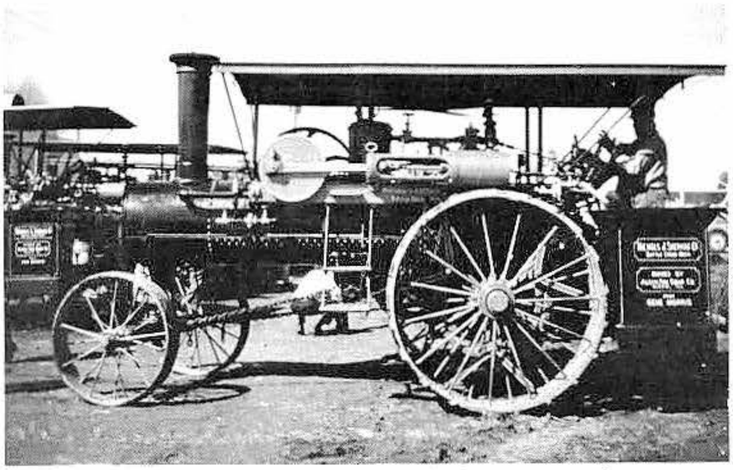
This 16 H.P. Nichols-Shepard steam traction engine, built in 1924, is owned by Laurel Runals of LaGrange, Ohio. It is under full steam at the Richland County Steam Threshers Assn. show at Mansfield, Ohio. Nichols-Shepard made steam traction engines of double and single cylinder, the Red River Special threshing machines, rice threshers, alfalfa and small seeds threshers, mounted water tanks, low-down tank pumps, and the Nichols-Shepard all-steel frame horsepowers.



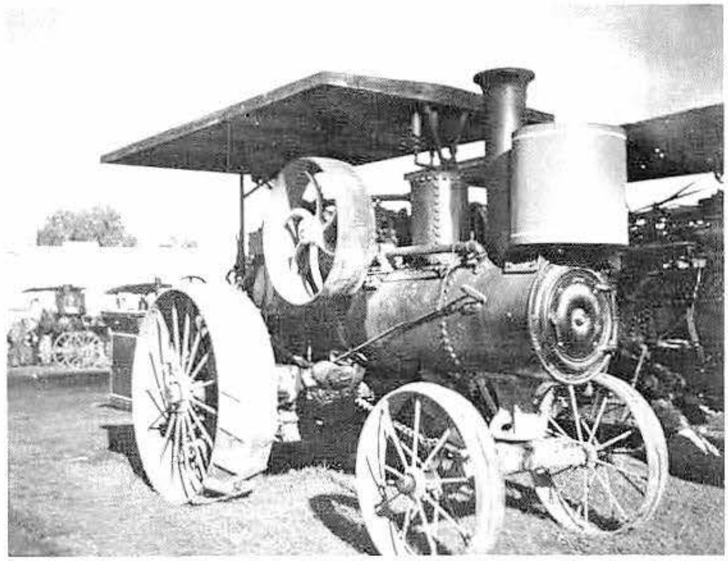


Designed strictly as a straw burner was this 1920 Nichols-Shepard rear-mounted engine. David Shepard passed away in 1904 at the age of 84, having been vice-president of the Nichols & Shepard Co. till then. The company became part of the Oliver Farm Equipment Co. in 1929. Today the Oliver Corp. is part of the White Motor Corp.

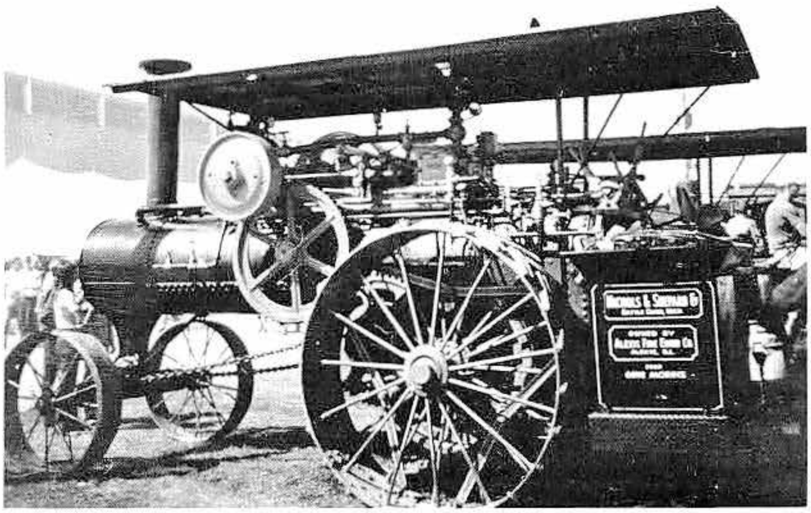
Nichols & Shepard Co.



This 16 H.P. Nichols-Shepard single cylinder steam traction engine, built in 1916, is owned by Gene Morris of Alexis, Ill. It is in action at the Midwest Old Settlers & Threshers Assn. show.

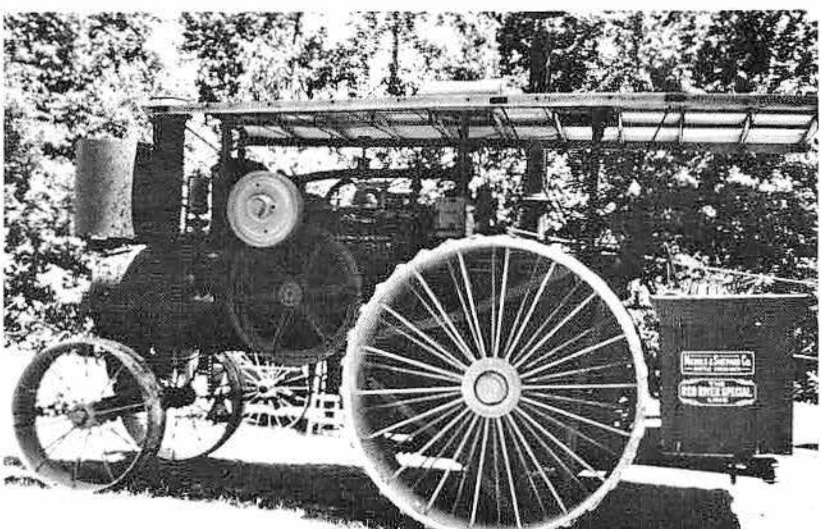


This 16 H.P. Nichols-Shepard steam traction engine, built in 1910, is owned by Milo Mathews of Mount Union, Iowa. It is in action at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa.

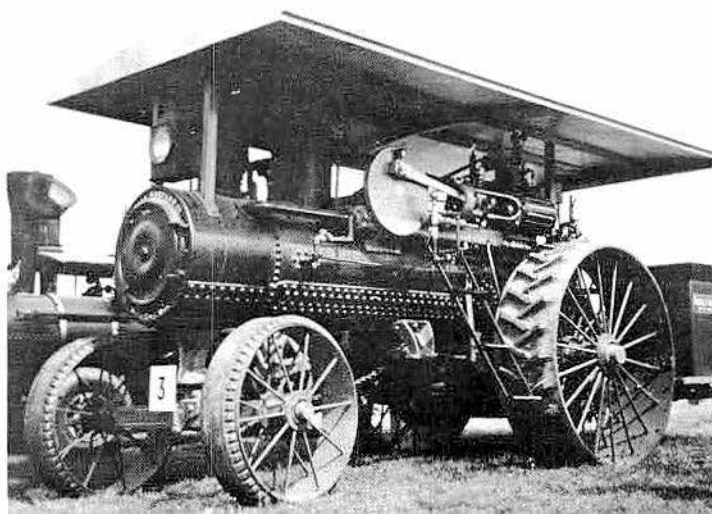


This 22-75 H.P. Nichols-Shepard double cylinder steam traction engine, built in 1913, is owned by Gene Morris, of Alexis, Ill. It is on display at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa.

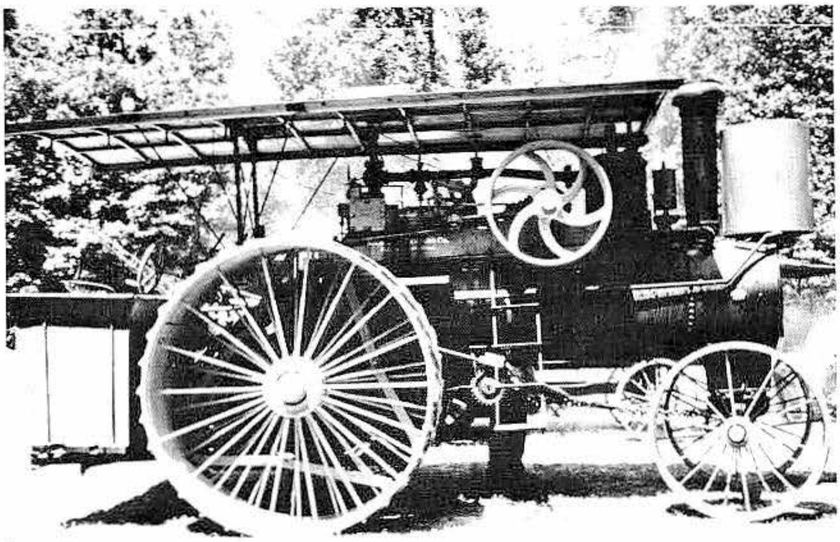
This monster, with a full-length canopy cab is a 25-85 H.P. Nichols-Shepard steam traction engine built in 1916. This engine is owned by Willard Marshall of Cayuga, Ontario, and is shown at the Ontario Steam & Antique Preservers show. This engine was built in December 1915 and sold in 1916 to a farmer in Sydney, Manitoba. It was then sold to Peck Supplies in 1927, and later resold to a sawmill operator in the mountains of Manitoba. The mill burned in 1935, but the engine was saved and sold to the Swan River Museum. In 1960, Peck Farm Supplies traded it for a restored George White & Son engine plus $900. Peck restored the engine and had it in parades in Brandon and other cities in the west and put it on display at the Austin Museum. In 1968, Peck transported it to Ontario and stored it in a shed until 1971, at which time it was sold to the present owners, Willard and Gordon of Cayuga, Ontario. It has ½-inch boiler plate and is tested for 170 lbs. pressure. It weighs 20 tons full of water. This engine was placed in service when a lumber mill burned down in 1972 and it cut lumber until 1973. It took a 260 H.P. diesel engine to replace it, yet the steam engine could deliver more power than the diesel.



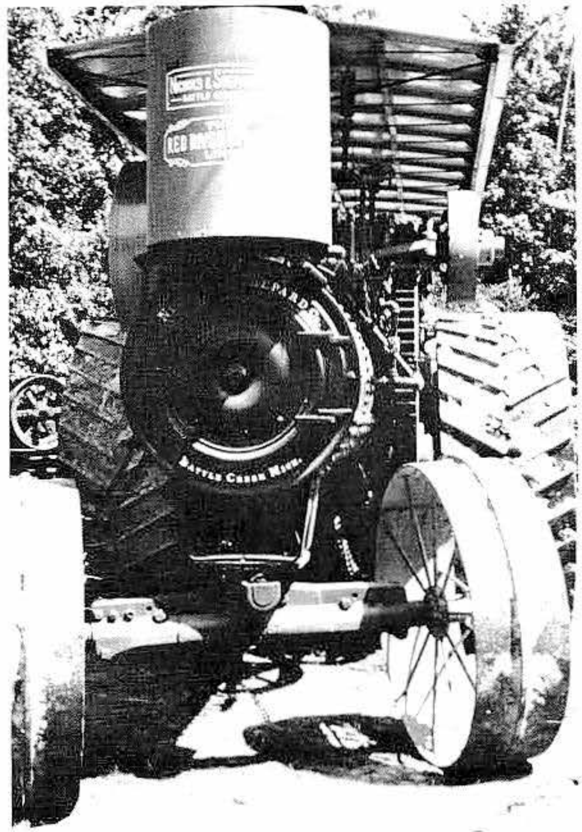
This 120 H.P. Nichols-Shepard steam traction engine, built in 1910, is owned by George Neal of Easton, Md. It is at the Tuckahoe Steam & Gas Assn. show at Easton, Md. This engine is the largest Nichols-Shepard on the eastern shore and one of only two of this size in existence today.



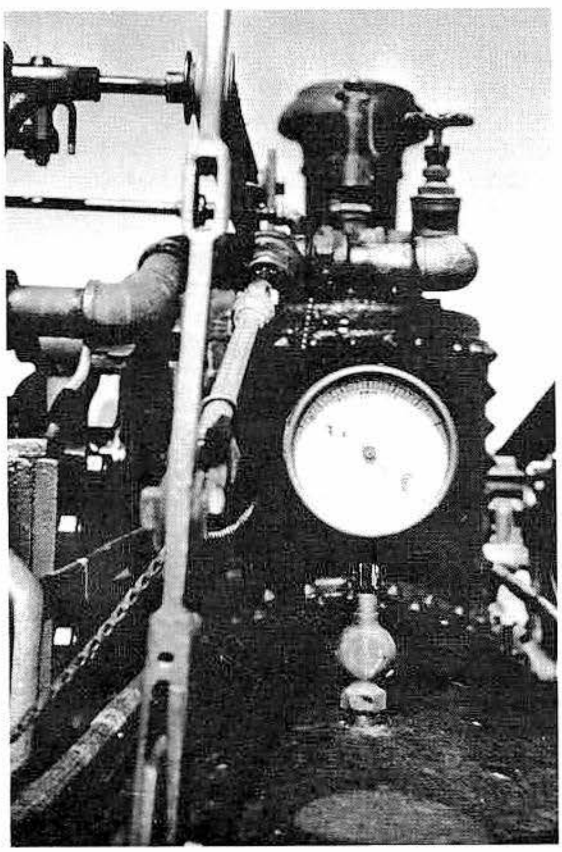
Nichols & Shepard Co.



This is the flywheel side of the huge 120 H.P. Nichols-Shepard steam traction engine owned by George Neal of Easton, Md.



Nichols-Shepard hit an all-time high for sheer size when it built this 120 H.P. engine in 1910. This was the largest engine built by the company, and was designed primarily for the western grain fields. This front view gives an idea of the size of both the front and rear wheels. This is a double cylinder engine.

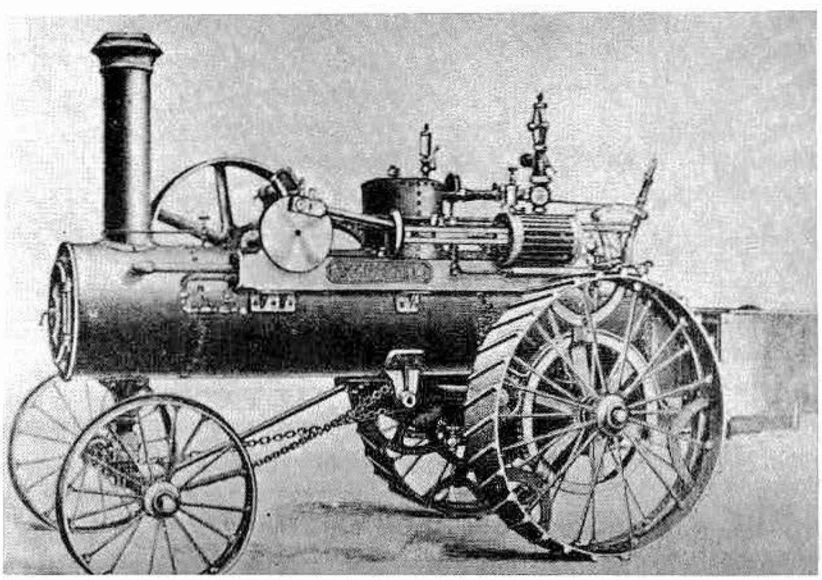


One of the most important gauges on a steam engine is the steam pressure gauge, which measures the outward pressure of the steam on the walls of the boiler. The gauge measures this pressure in pounds per square inch, and all boilers and boiler plate are measured and rated in tensile strength of pounds-per-square-inch. If the gauges register 150 pounds, it means that every square inch of wall inside of the boiler is being subjected to an outward pressure of 150 pounds. This gauge is on the 8 H.P. Nichols-Shepard owned by Pete Lovelace.

This 20 H.P. Nichols-Shepard steam traction engine, built in 1913, is owned by Milo Mathews of Mount Union, Iowa. It is in action at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa. Mr. Mathews' two Nichols-Shepard engines are unusual in that both are equipped with front-mounted water tanks. Actually, the Nichols & Shepard Co. produced comparatively few engines with this type of water supply, preferring instead the platform mounted tanks, with side-mounts for an auxiliary supply.

Ohio Thresher & Engine Co.

On August 19, 1889 the following men, William Ackerman, Andrew Burneson, H. H. Brinkerhoff and J. G. Nixon, all of whom were from Mansfield, Ohio, and who had been associated with the Aultman & Taylor Company, journeyed to Upper Sandusky, Ohio. They were joined by others in organizing "The Ohio Thresher and Engine Company". They erected a modest building along the side of the Pennsylvania railroad tracks in Upper Sandusky, Ohio which served as a plant in which they built threshing machines, steam engines and other machinery during the years from 1889 to 1902 inclusive or for a period of approximately thirteen years. This company went out of business in 1902.



"THE OHIO" steam traction engine was built by the Ohio Thresher and Engine Co., Upper Sandusky, Ohio. This engine used a simple cylinder and was gear-driven. The company made threshing machines, steam engines, steam traction engines and other machinery during the years from 1889 to 1902.

Owens, Lane & Dyer Co.

Job W. Owens, born in Wales, moved to Columbus, Ohio in 1824, and to Hamilton, Ohio, in 1845, where he founded the firm of Owens, Ebert & Dyer. In 1846-7 the name was changed to Owens, Lane & Dyer. The company built steam engines, threshers and nearly everything in metal from waffle irons to papermaking machines and sawmills.

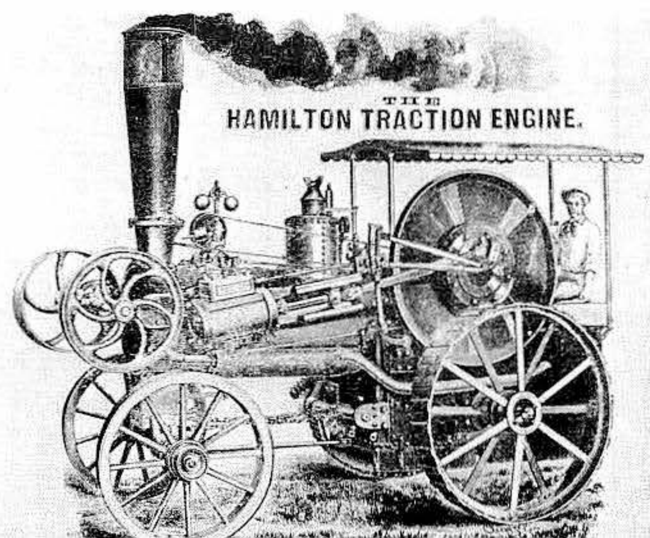
Job Owens is credited with building the first traction engine built west of Pittsburgh. In 1873, Owens, Lane & Dyer built the first steam engine. It was of chain drive, with its cylinder on the firebox end of the boiler—a design that was discarded almost immediately. In 1874 the firm brought out a new design that was gear driven, with an inclined cylinder mounted on the smoke box end of the boiler, and a shaft with belt pulleys mounted across the front end of the boiler. In all advertising, Owens, Lane & Dyer called this engine the "Hamilton" engine. The depression of the 1870s forced Owens, Lane & Dyer into receivership. Clarke Lane was the receiver, and operations continued to 1880.

During the same period of time, George H. Rentschler, owner of a small factory in Hamilton, with his partner, J. C. Hooven, and G. H. Helvey, had been marketing their own portable engines and threshers under the trade name Monarch.

They subcontracted their engines to one shop and their threshers to another, with all parts being farmed out to still other firms. Rentschler and partners reorganized about 1880, it is believed, with a consolidation with the Owens, Lane & Dyer Co., and became the Hooven, Owens, Rentschler Company.

Ads from old farm papers report that the new firm showed its Monarch traction engine at the St. Louis fair in 1881, where it was awarded first prize as the most powerful engine on display there.

The Owens, Lane & Dyer Co. of Hamilton, Ohio, is credited with being the first company west of Pittsburgh, to build steam traction engines. The product of this company, known as "The Hamilton Traction Engine," first appeared in 1873, and was produced in small numbers for several years thereafter. The engine was a rather unique machine, with a huge rear-mounted flywheel and a forward-mounted simple cylinder. The belt pulley was mounted on the smoke-box door, and apparently was run by a belt from the flywheel, though such a belt is not shown in this illustration. A locomotive-style fire-box and boiler were used. No technical information exists as to the size or horsepower of this engine, or who made the various components that were used in its construction.

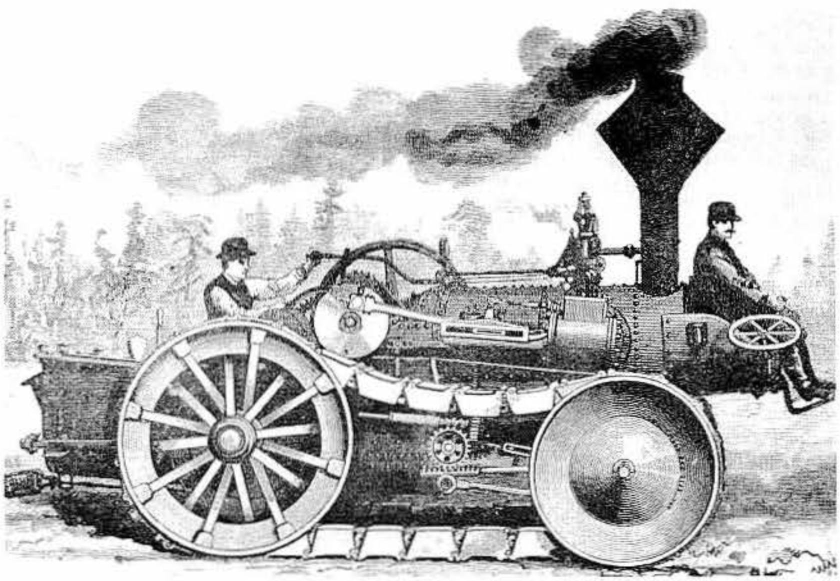


George F. Page & Co.

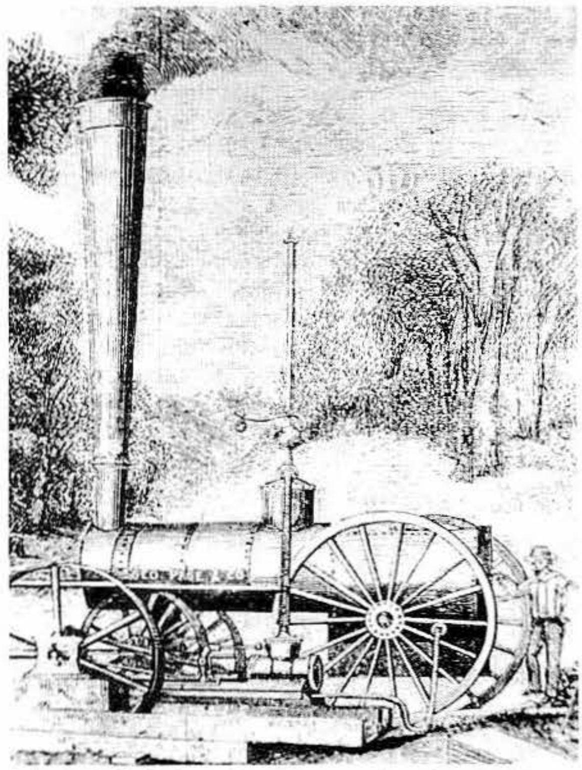
The 12 H.P. George F. Page & Co. steam traction engine was built in Baltimore, Maryland. Heretofore in the operation of traction engines a serious difficulty had been caused by the slipping of the wheels in passing over sandy or soft soil. This engine overcame this to a great extent, as the surface of the wheel in contact with the ground was greatly increased.. This was accomplished by means of a V-shaped chain connecting each pair of wheels, thus forming a track on the pulling or tight side of the chain, that was laid on the ground for the drivers to roll on.

Besides increasing the bearing surface this enabled the engine to utilize more of its power than it would if rolling on the ground. The pilot wheels were of the same width as the drivers, and the weight was distributed on all four points. The guiding of these wheels was accomplished with a short axle pivoted at the center of the face of the wheels, so that the length of the chains were not altered when turning a corner. The engine rolled on its own rail, the pilot wheels laying it down. And, being connected with the drivers, the pilots took their proportion of the weight of the engine.

In regard to the work which this engine could do, the inventor, George F. Page, of Baltimore, stated that "with my twelve horse engine, I pulled through the red clay mud, up a grade of one in twelve, ten tons in two six-horse wagons. The engine made better time, with less water and coal, than the old wheels on a dry road of the same grade."



This monstrosity is a 12 H.P. track-laying steam traction engine built by the George F. Page & Co. of Baltimore, Md. It is one of the first track-laying machines on record, and there is little actual proof of the success of this engine except for the rather grand claim of the inventor, Mr. Page. In an introductory press interview, Mr. Page stated, "With my 12 H.P. engine I pulled through red clay mud, up a grade of one in twelve, while towing 10 tons in two 6-horse wagons. The engine made better time, with less water and coal, than the old wheels on a dry road of the same grade." Research could find no other evidence to prove or disprove this statement, and it appears that very few such engines were ever sold. The engine required two operators, and it appears that steering would have been very cumbersome, to say the least.



A fantastically high smokestack was used on this 12 H.P. portable engine, built by the George F. Page Co. of Baltimore, Md. These engines were built primarily to power the sawmills built by the Page company. Note that this is in reality a portable boiler, as the engine and fly-wheel are mounted on skids alongside of the boiler. The George F. Page Co. produced portable steam engines, steam traction engines, and sawmills, though sawmills constituted the largest part of the production.

Paxton (Harrisburg Car Mfg. Co.)

The Harrisburg Car Mfg. Co., of Pennsylvania was a vast enterprise mainly started by William Calder, about 1853, when it was first organized. There were nine men who together subscribed the capital of $25,000, necessary to establish the firm. The company purchased two and a half acres of ground, comprising a portion of the present site, and had facilities to turn out nine railroad cars per week.

One of the shareholders, William T. Hildrup, a practical mechanic, had served for over ten years in a railroad car factory in Worcester, Mass. He was named manager, and under his care, the company prospered. The cars turned out then, as compared to later ones, were vastly inferior in finish and construction, although they commanded a high price.

Up to 1862, the original organization remained unchanged, but at that date William Calder purchased the interests of several of the stockholders and re-established the concern upon a larger basis. Having now a controlling interest in the works, he and four others increased the amount of working capital to $75,000. The former manager of the old concern became the superintendent of the new. The number of employes was now 250, and the works was able to turn out four large eight-wheeled freight cars each working day.

There were prosperous times for the car-builders during the war, as the government depended upon railroads for the transportation of men and material. A great many cars had been destroyed by raids and accidents of all kinds, including the not infrequent voluntary destruction of rolling stock to prevent them and their contents from falling into the hands of the enemy. Of course these had to be replaced, and the trade was lively. The works accordingly increased its capacity, and in 1864 the capital invested was $200,000, which four years later was augmented to $300,000. Of course the production increased correspondingly, and the company was now able to turn out 14 cars per day and give employment to 1,200 men.

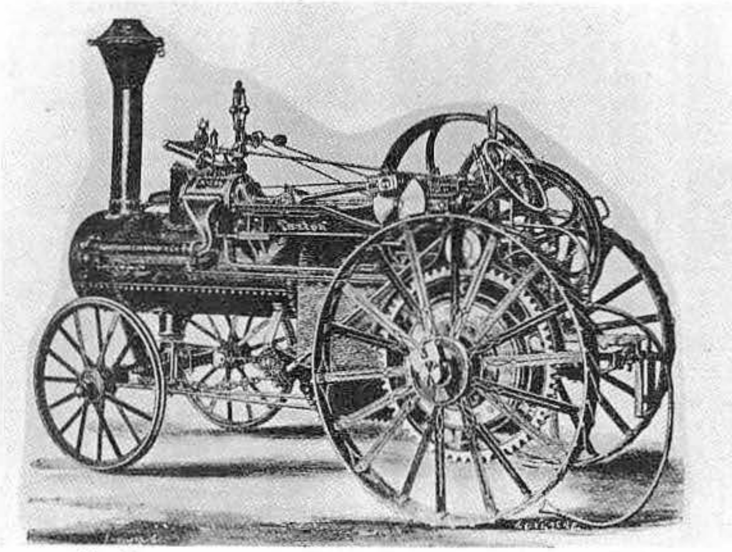
Out of these works grew first a large sawmill. Next came a foundry and machine works, which were organized as a separate company. The last enterprise was a planing mill and lumber yard, costing $100,000.

In April, 1872, the entire establishment, including all the machinery, material and manufactured stock, was burned to the ground, involving a loss of over $500,000. While the fire was yet smoldering among the heaps of debris, the work of renovation commenced. About three-fourths of the men thrown out of employment by the conflagration were at once engaged in removing the rubbish, reconstructing the shops, or working in other establishments under the control of the company. Within 90 days after the fire, the works were rebuilt in a far more substantial manner than originally.

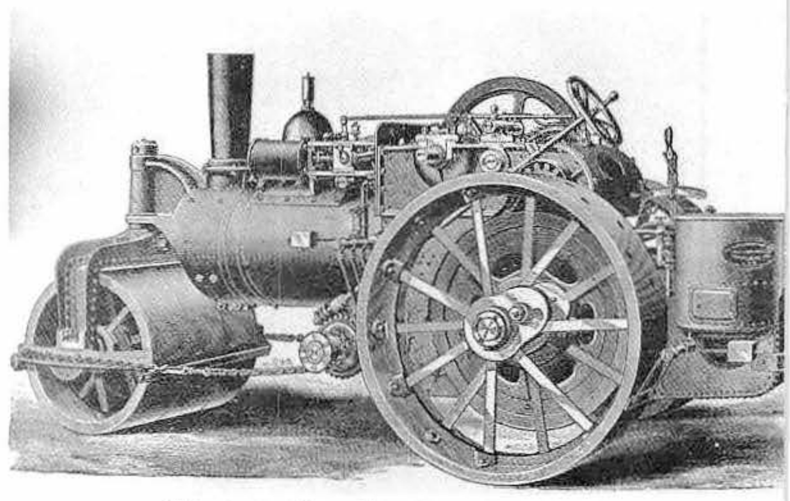
The convenience and quality of the framing and construction departments had been greatly increased and improved, and where formerly 10 cars could be manufactured daily, 14 were now turned out. The company had furnished the New York Central Railroad with as high as 1,000 cars per year, and also did large amounts of work for the Pennsylvania, Northern Central and other railroads. The average price of cars manufactured was $850 each.

This company, from the 1880s to 1890s also built the Paxton steam traction engine. This steam traction engine was a good engine, but was built in the days of single-riveted boilers.

The company went out of business in the early 1890s.



The Paxton steam traction engine was made between 1880 and the mid-1890's by the Harrisburg Car Mfg. Co. of Harrisburg, Pa. The engine apparently was as good as any on the market at the time, but did not seem to be outstanding or unique in any way. It used a locomotive-style boiler and fire-box, and a simple single cylinder with a rear crankshaft. The boiler was single riveted in the manner of the day, which meant that the engine probably suffered from a multitude of leakage problems after a few years of hard use. The engine shown here was built in 1886. It bears engine No. 758, so obviously more than a few of these machines were sold.



This is the 10-ton Harrisburg Car Mfg. Co., steam road roller. The Harrisburg Car Mfg. Co., was a vast enterprise started by William Calder in 1853. Its main activity was construction of railroad cars, and it appears that the building of steam traction engines and steam road rollers was very secondary in the overall company activities. The rollers were used to roll down highways, breaking up old roads, plowing and hauling heavy loads. This roller's yoke was able to swing. It rests upon the axle of the front roller, which also forms the steering wheel. The horizontal swinging motion is imparted to it by the steering mechanism, which consists of chain and worm gear, and is operated by a hand-wheel near the reversing lever.

Peerless (Geiser Mfg. Co.)

Peter Geiser started the Geiser Company in 1852. Prior to this, from 1848 to 1850, he built his first grain thresher at Smithburg, Maryland. In 1852, he patented this thresher, and in 1854 displayed it at the Hagerstown Fair and won first prize in competition with a newly built Smith thresher from New York.

In 1855, the Geiser Company was organized, and entered into an agreement with Jones & Miller of Hagerstown, Maryland, to manufacture Geiser threshers. In 1860 the Geiser Mfg. Co., moved to Waynesboro, Pa., on part of the land purchased by George Frick two years before. At the same time George Frick moved to this land, beside Peter Geiser.

In 1869, the Geiser Manufacturing Company was incorporated and turned out 400 threshers. In 1881, Frank Landis, not bothering too much about patents, took the best engine and assimilated it into the Geiser which was named the Peerless, in order to compete with the Frick Eclipse.

In 1912, the Geiser Mfg. Company sold out to the Emerson Brantingham Company of Rockford, Ill. The end came in 1940 when the Geiser factory and shops burned to the ground, with the exception of the brick office building which was later converted into a dwelling and still stands.

The Peerless 40 H.P. Z-3 special heavy duty steam traction engine was built especially for heavy work, such as hauling logs, lumber and ore, road building, contractor's use and plowing. The engine had two cylinders. The drive wheels were six feet in diameter, and were made entirely of iron and steel. Spokes were made of solid steel and each wheel was equipped with two rows of such spokes. The tires were 7/8 inch thick.

The driving wheel axle was 7 inches in diameter, and the counter shaft was 6 inches in diameter. The front axle was of extra double heavy pipe, which was 6-5/8 inches outside diameter and 4-7/8 inches inside diameter. The king post was of an entirely new pattern, its base in the length direction of the boiler was three feet. On account of this length, the brace rods from the fire box to the king post were entirely dispensed with.

The engine shaft pinon, the intermediate wheel and the counter wheel had six inch faces. The master wheel and the master wheel pinion had 7 inch faces. The gear wheels were made from machine-cut patterns, and were enclosed in casings making them as near to dust proof as possible. No friction clutch was used on this engine.

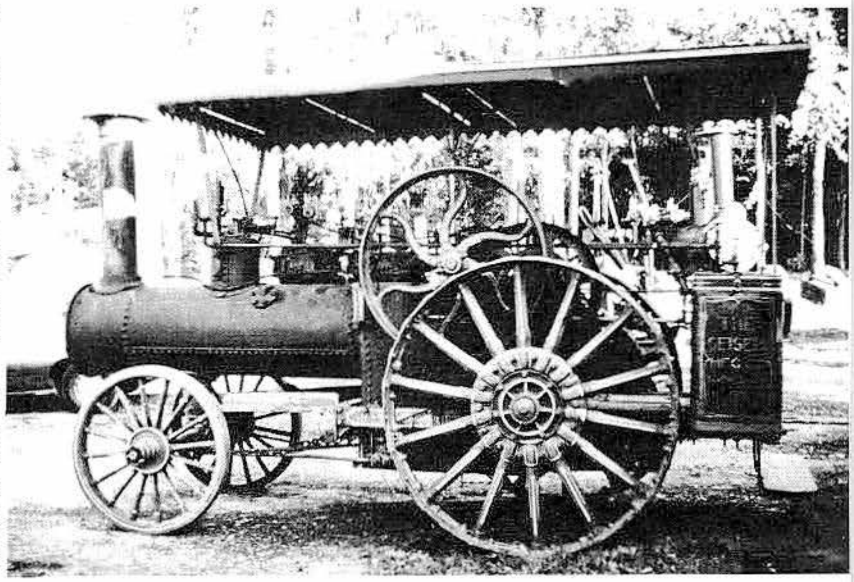
The compensating gear used on all of the traction engines consisted entirely of spur gears. On the engine were mounted two water tanks, with a combined capacity of 540 gallons. A coal box of about 1,000 lbs. capacity was attached to the engine right below the fire door.

The Geiser Mfg. Co. made the following: single and double cylinder steam traction engines, 10 to 120 H.P.; a 10-ton Peerless road roller; portable steam engines; portables on sills; the "Domestic" steam engine, which had an upright boiler; the New Peerless threshers; rice threshers; clover and alfalfa hullers; the Peerless hay press baler; four-wheeled mounted horse power; the Peerless Gang Plow attachment, and sawmills.

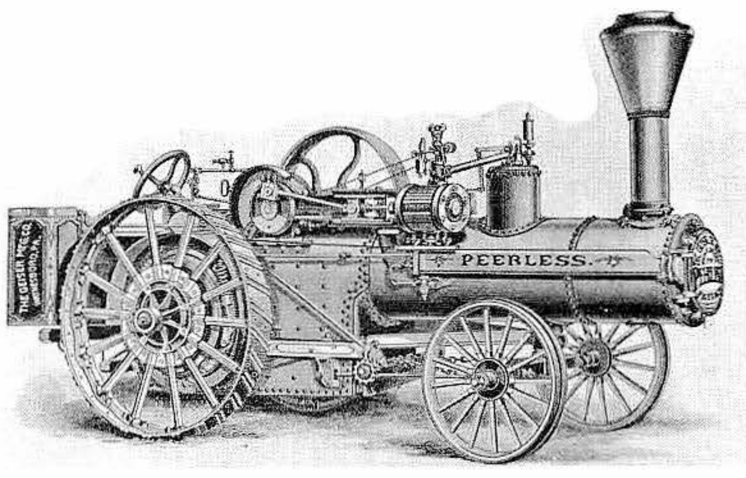
The Emerson-Brantingham Co. was incorporated in Illinois, August 19, 1895, though the business was established in 1852.

This company acquired the Geiser Mfg. Co. of Waynesboro, Pa., and the Reeves & Company of Columbus, Indiana. Emerson-Brantingham made 15,801 steam traction engines.

Then, in 1928, J. I. Case bought a limited part of the Emerson-Brantingham Co.

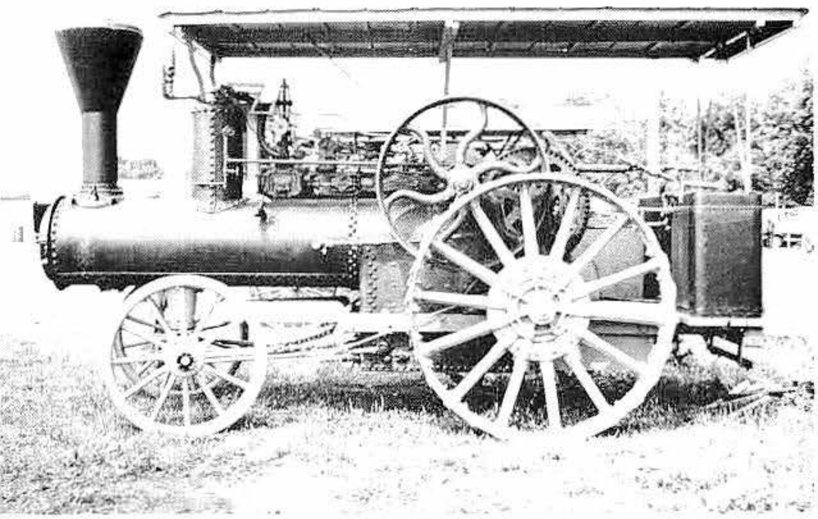


This 10 H.P. Peerless steam traction engine was built by Geiser Mfg. Co. of Waynesboro, Pa., in 1884. It is owned by Samuel Osborn of New Oxford, Pa. Osborn's engine is a Q Model and the engine No. is 1974. Osborn is working on a New Geiser Museum, which will be near his residence in New Oxford, Pa.

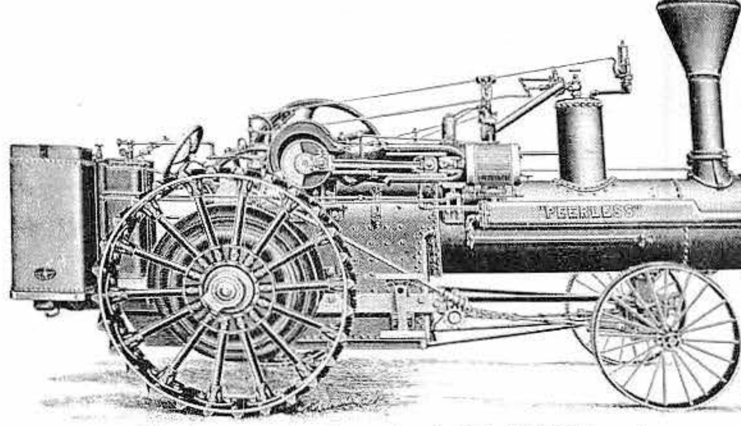


Geiser built this straw burning Peerless steam traction engine in 1893. This engine used water cooled bearings. The valve and its seat were interchangeable and could be duplicated at any time. The boiler had a water-lined smoke-box.

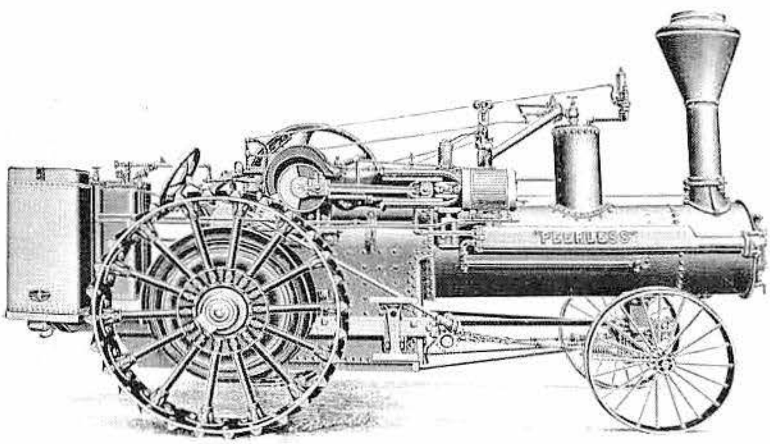
Peerless (Geiser Mfg. Co.)



This 10 H.P. Peerless steam traction engine, built in 1898, is owned by G. Murphy of Dover, Pa. It appears here at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa. Peter Geiser started the Geiser Co. in 1852.

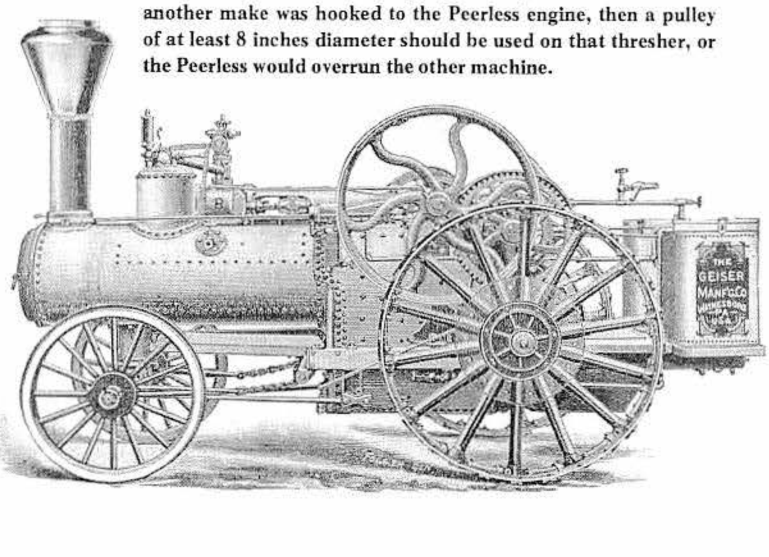


A Peerless steam traction engine, built in 1913. This engine was made in 12, 15 and 16 H.P. models. It would burn wood or coal. These engines were all built with the water tank on flywheel side turned so the engine could be belted backwards.

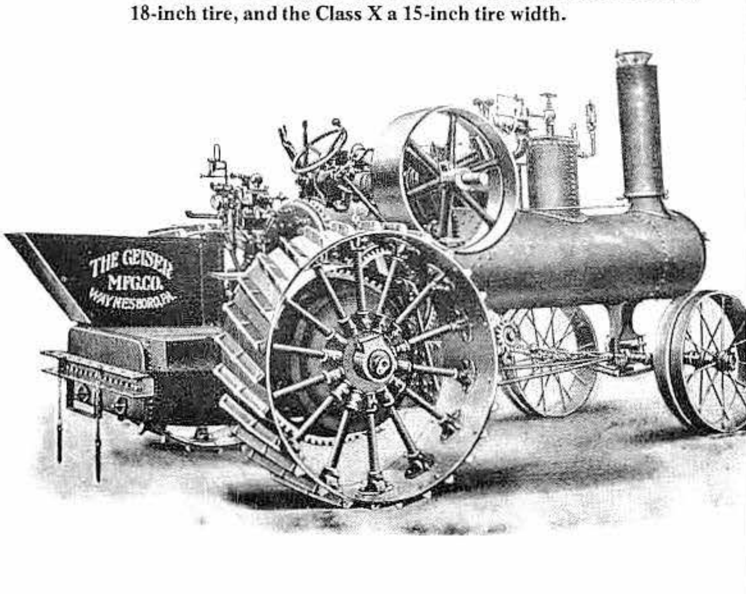


15 H.P., and the TT Class at 16 H.P. The engines had cylinders of 7½, 8 and 8½ inches bore respectively. All classes had a 10-inch stroke, and in other respects were identical with each other. The flywheel was 48 inches in diameter, had an 8-inch face, and would run a maximum of 220 RPM. The rear wheels had a diameter of 66 inches and a standard tire width of 15 inches. The front wheels had a diameter of 40 inches and a width of 5½ inches. Peerless claimed to be the only genuine spring-mounted engine on the market at the time.

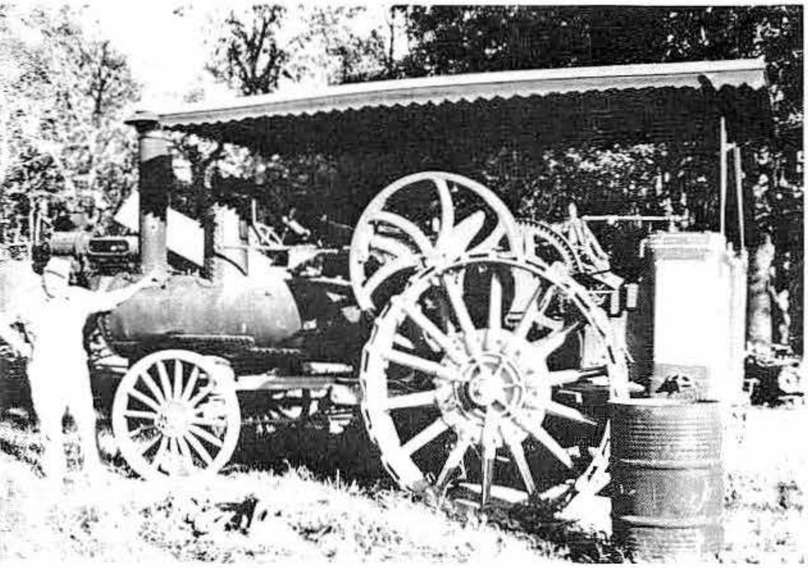
Designated the Model-R, this 13 H.P. Peerless was built in 1893 by the Geiser Mfg. Co. This engine used a much larger belt pulley than most other engines on the market at the time. The size of this pulley was compatible with the pulley used on the Geiser thresher. But the company warned, that if a thresher of another make was hooked to the Peerless engine, then a pulley of at least 8 inches diameter should be used on that thresher, or the Peerless would overrun the other machine.



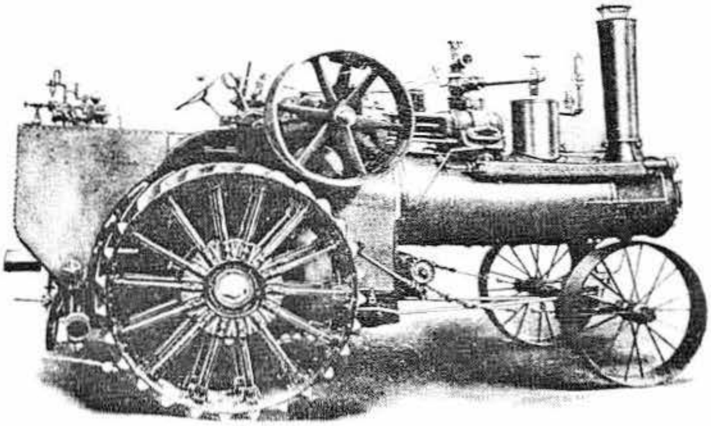
This Peerless steam traction engine was produced in four horsepower ranges in 1913. The ranges were: Class X, a 14 H.P. unit with a 7¾-inch bore; Class U, an 18 H.P. unit with an 8¾-inch bore; Class UU, a 22 H.P. engine with a 9½-inch bore, and Class Z, a 25 H.P. unit with a 10-inch bore. All used a 10-inch stroke, and all had a flywheel 42 inches in diameter that turned at a maximum working speed of 260 RPM. The rear wheels were 66 inches in diameter on all engines, but the tire width on the Class Z and UU engines was 20 inches, while the Class U had an 18-inch tire, and the Class X a 15-inch tire width.



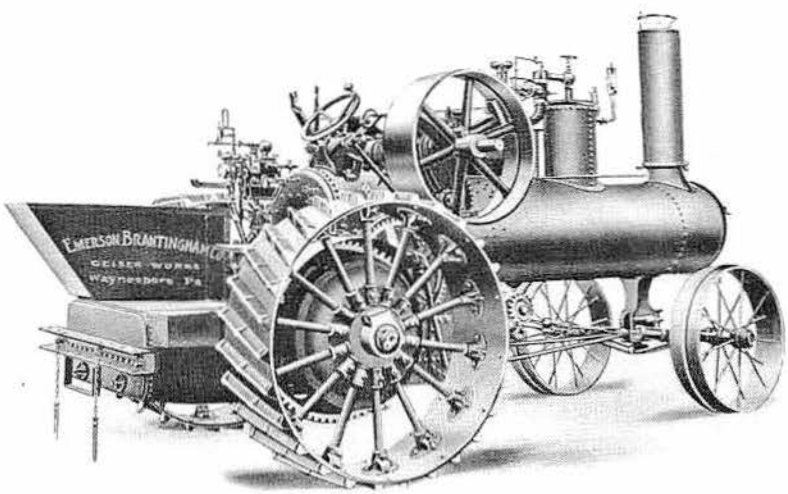
Peerless (Geiser Mfg. Co.)



Samuel Osborn of New Oxford, Pa., who is busily trying to construct a Geiser Museum on his property, proudly displays his 1891 vintage 16 H.P. Peerless. This is the Peerless Model T. It bears Geiser's production No. 3509. Mr. Osborn has one of the larger collections of steam traction engines in existence in the east. The majority of his engines were produced in Pennsylvania and surrounding areas.

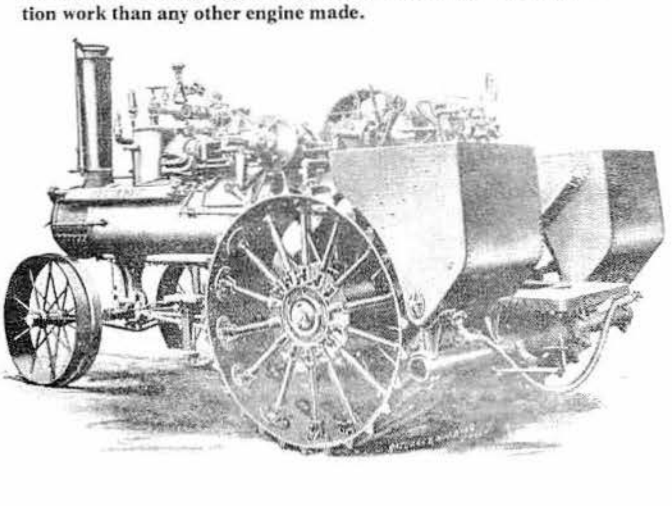


A 20 H.P. Peerless steam traction engine, double cylinder, U model, built in 1913 by Geiser Mfg. Co. It is a double drive, wood or coal burning engine, especially designed and built for heavy draft. The principal weight was on the great drive wheels, the axle of which ran clear across the rear end of the boiler. All parts were made especially large and strong, and had anti-friction bearings.

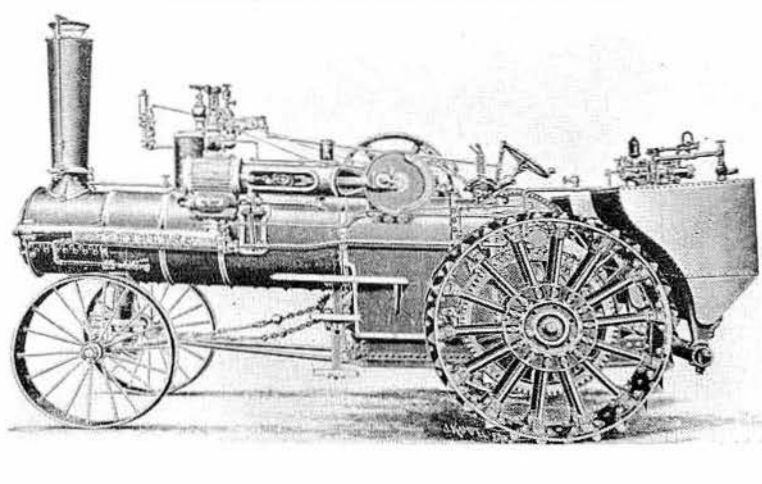


Appearing to be virtually identical to the 1913 Peerless steam traction engine was this 1914 Emerson Brantingham engine built by the Geiser works. The name switch apparently did not effect the design or specifications of this engine, as the data sheets of the two machines are identical. On these engines, the engineer's platform was actually the top of the water tank. The fuel bunker is mounted on top of this tank. On these engines, the gear wheels were all made from machine-cut patterns. The compensating gear consisted entirely of spur gears.

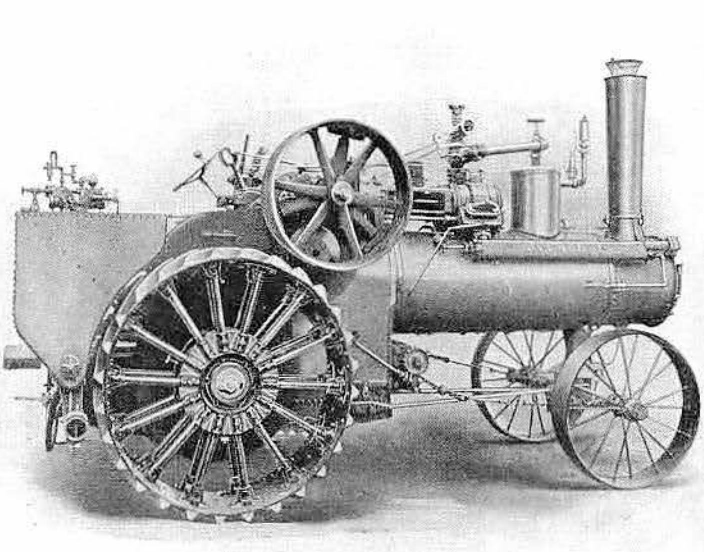
A rear view of the 1913 20 H.P. Peerless double cylinder, U model. It is a double drive, wood or coal burning engine. This engine was double geared, (drives from both sides). All gearing was of large dimensions, wide faced and made of genuine open hearth steel. Eight pinions were used in the compensating gear, and only spur gears were used, rather than bevel gears. This formed a cushion that not only took away all jar resulting from sudden strain, but kept the gearing in perfect mesh and insured an even distribution of the strain on all of the pinions. The gearing was as near indestructible as possible. The contractor's lumbering and plowing engine supposedly would stand more traction work than any other engine made.



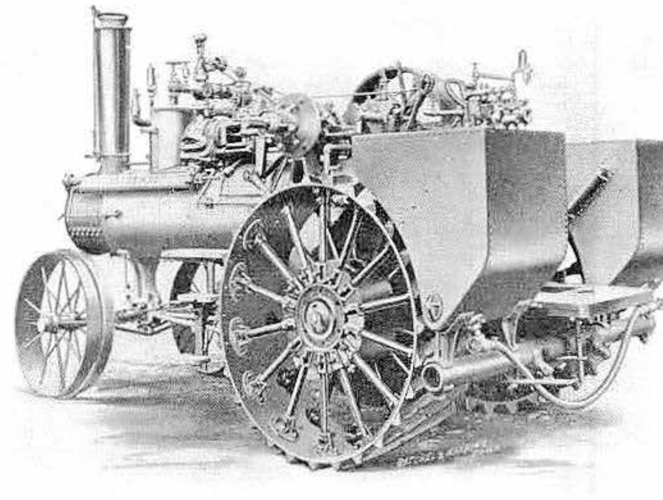
This is the single cylinder version of the 1913 Model U 20 H.P. Peerless steam traction engine. It is a double drive, wood or coal burning engine. It had a cylinder of 8¾-inch bore and 10-inch stroke. The flywheel was 42 inches in diameter with a 12-inch face. It worked at 260 RPM. The diameter of the rear wheels was 66 inches and the width of the tires on the rear wheels was 24 inches. The diameter of the front wheels was 46 inches and the width of the tires on the front wheels was 10 inches.



Peerless (Geiser Mfg. Co.)

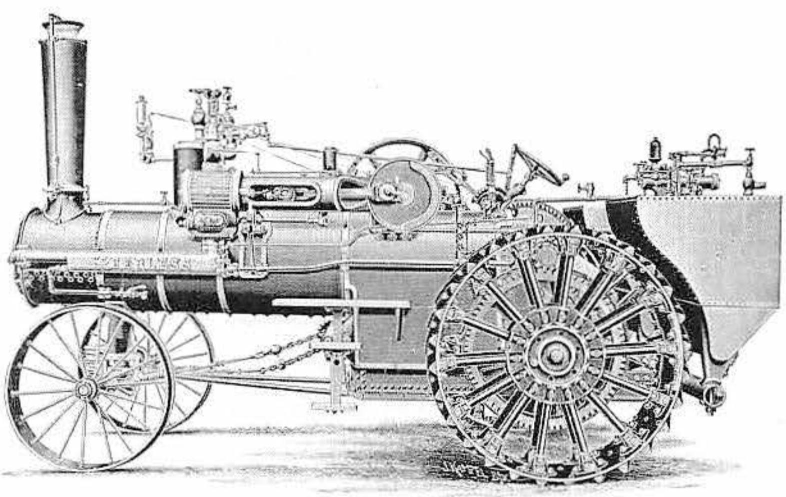


This is the 1914 Model U 20 H.P. Peerless steam traction engine with double cylinder. It is a double drive, wood or coal burning engine. This engine was especially designed and built for heavy draft, and carried extra large water tanks and fuel bunkers.

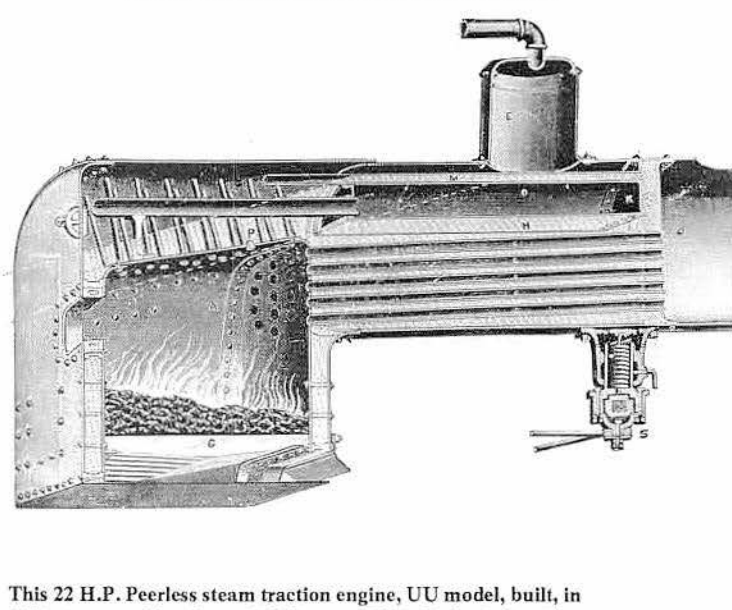


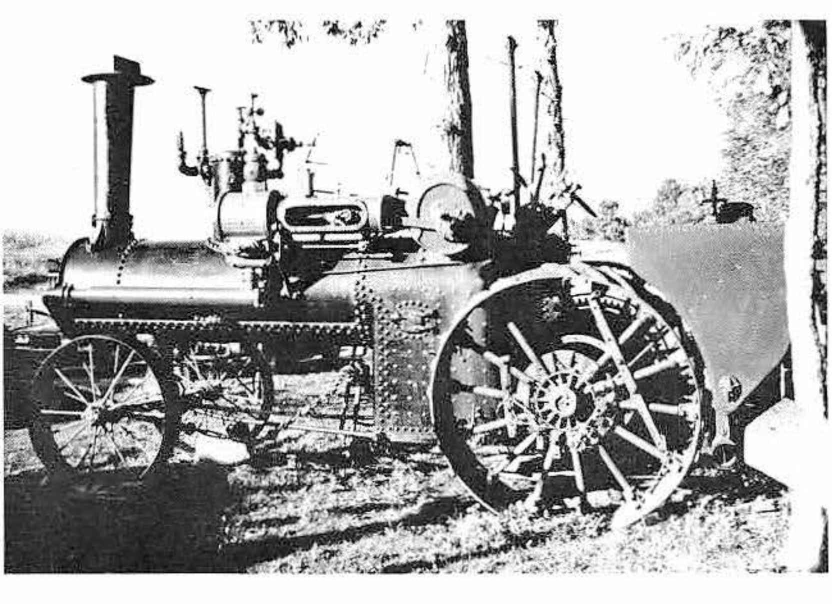
The rear view of the 1914 Model U shows virtually no change from the 1913 style. This 20 H.P. Peerless double cylinder is a double drive, wood or coal burning engine. The engine was double geared, and all gearing was of large dimension, wide faced, and made of genuine open hearth steel.

This is a single cylinder 1914 Model U 20 H.P. Peerless steam traction engine. It is a double drive, wood or coal burning engine. The 20 H.P. continued to use a cylinder of 8¾-inch bore and 10-inch stroke. In virtually all respects, it was identical to the 1913 Model U.

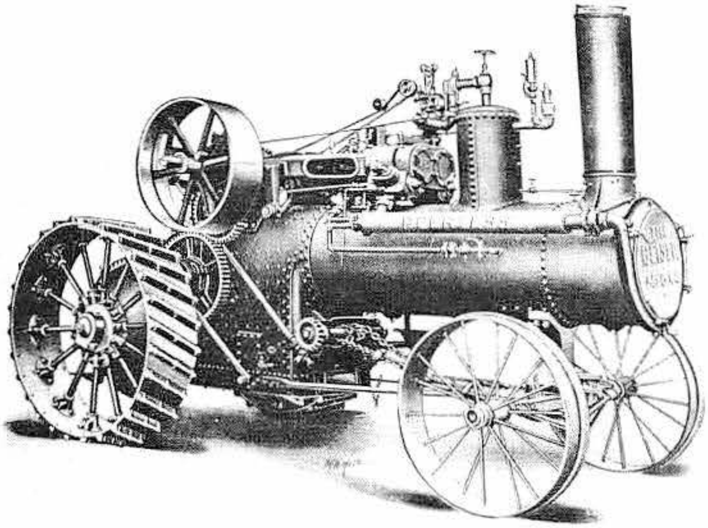


The Peerless boiler had a patent crown sheet protector. It is a well known fact that no greater damage could happen to a boiler than to permit the crown sheet to become bare of water. It is almost fatal and frequently ruins the sheet. The Peerless was one of the traction engines with a fire-box boiler that retained the water on the crown sheet when pulling downhill or kept the front end of the tubes covered while on an uphill pull. It did not carry water with the steam through the cylinder, as it produced a complete circulation of water from one end to the other in all parts of the water space. This is a 1914 Peerless boiler.

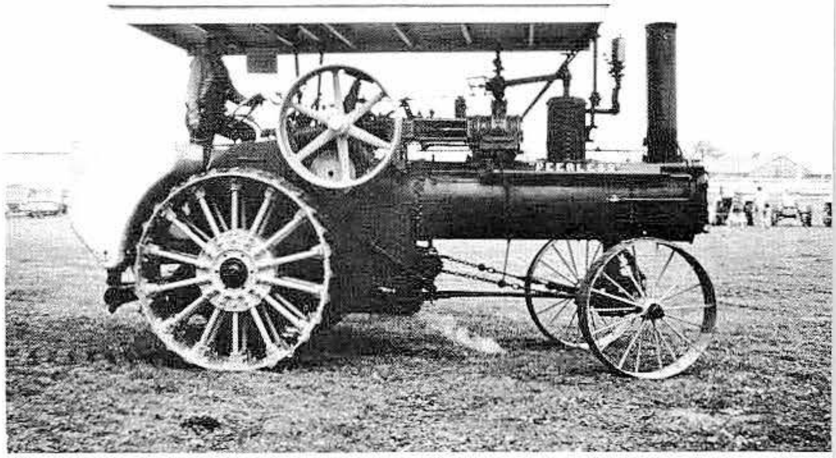




This 22 H.P. Peerless steam traction engine, UU model, built, in 1901, is owned by Samuel Osborn of New Oxford, Pa. This engine is No. 7268. It is restored to show condition.

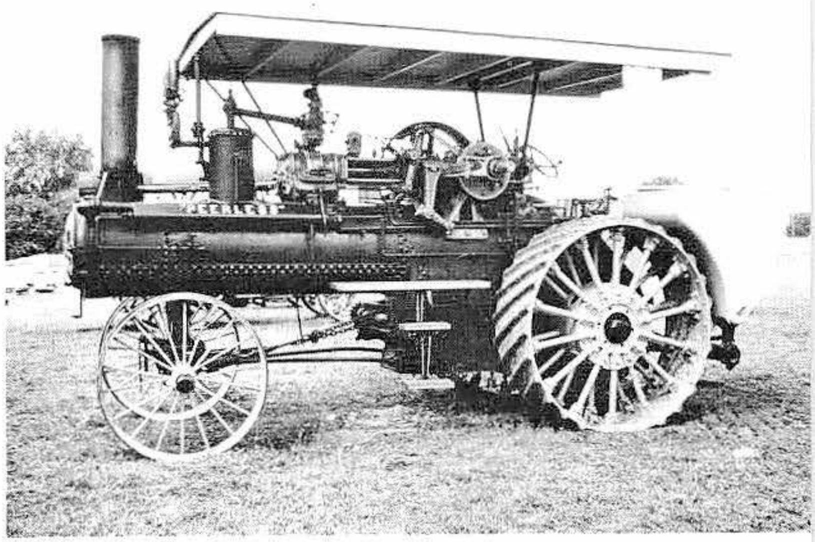


The 1913 style 22 H.P. Peerless steam traction engine, double cylinder, UU Model used two 7 x 10-inch cylinders. It was built to meet the demand for a double cylinder engine for threshing purposes. It was built with a compensating gear and piston valves.

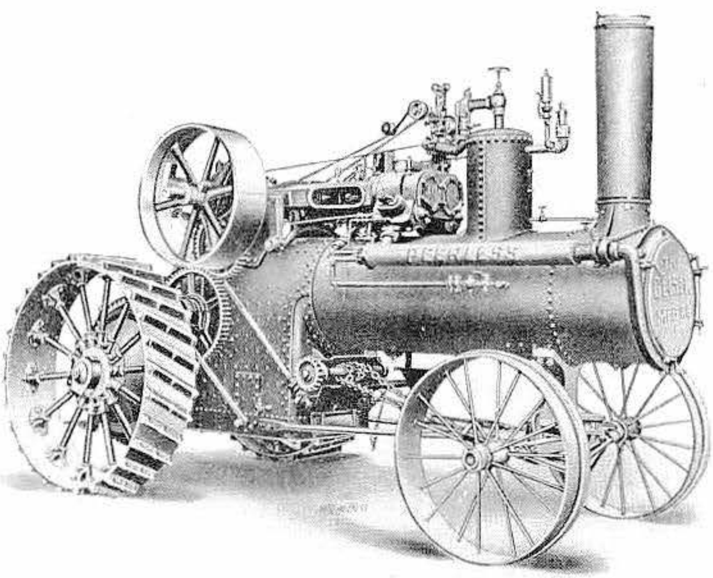


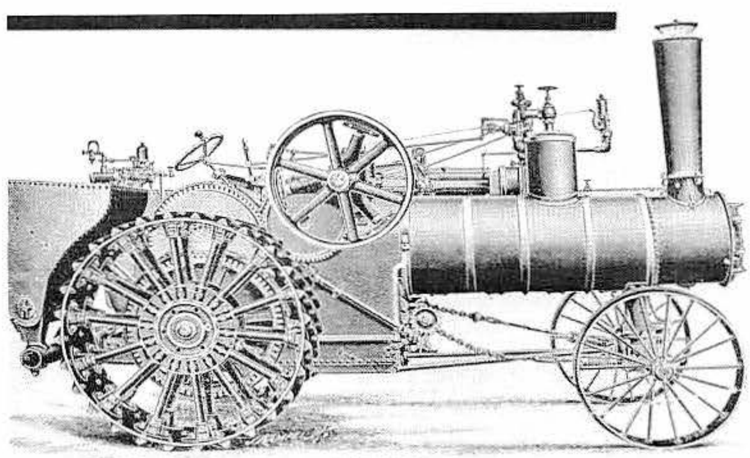
Complete with canopy is this 22 H.P. Peerless plow engine. It is owned by John Bonner of Mansfield, Ohio, and is in action at the Tuscarawas Valley Pioneer Power Assn. show at Dover, Ohio. This is the flywheel side.

From the left side, the double cylinders are in plain view on the 22 H.P. Peerless plow engine owned by John Bonner of Mansfield, Ohio. Note how the water tanks are formed around the rear wheels.



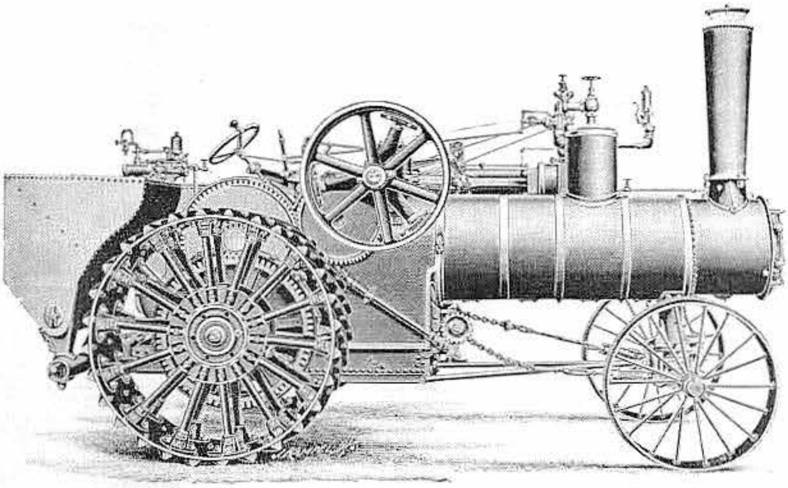
Looking rather stark is this 1914 UU Model, 22 H.P. Peerless double cylinder engine. This UU continued to use two 7 x 10-inch cyliders, built to meet the demand for a double cylinder engine for threshing purposes. It is shown here without water tanks or bunkers.



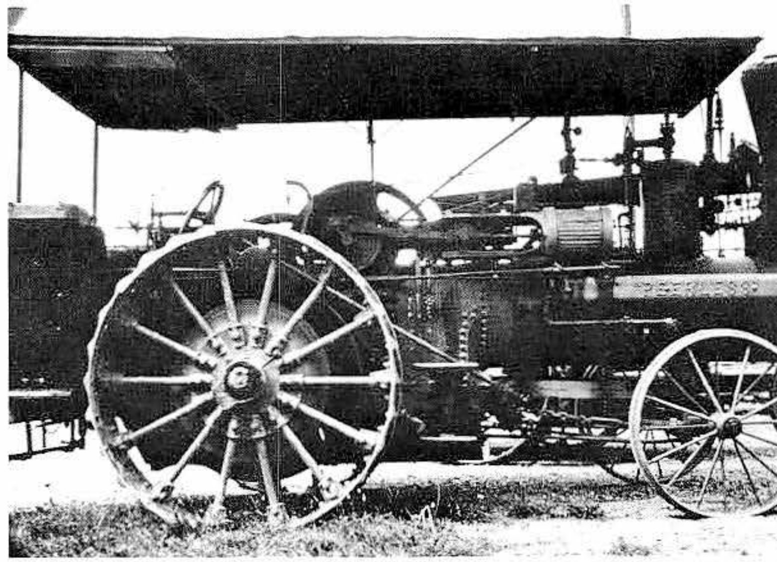


Built in 1913 was this 25 H.P. Peerless single cylinder, double drive engine. This is a Z Model that would burn wood or coal as fuel. This engine's fire-box boiler retained the water on the crown sheet when pulling downhill or kept the front end of tubes covered while going uphill.

Peerless (Geiser Mfg. Co.)

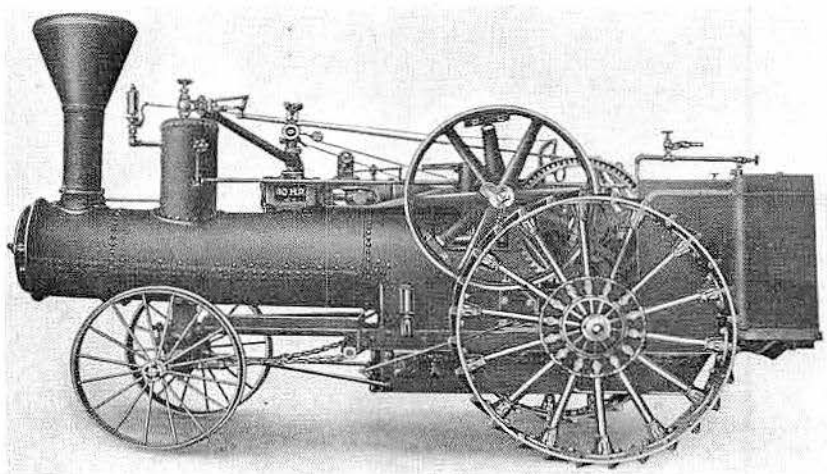


Identical to the 1913 version was the 1914 Model Z 25 H.P. Peerless single cylinder, double drive engine. It would burn wood or coal as fuel. This engine's rear axle was large and strong, a straight and continuous axle clear across in rear of boiler, turning in very large boxes and not in the wheels.

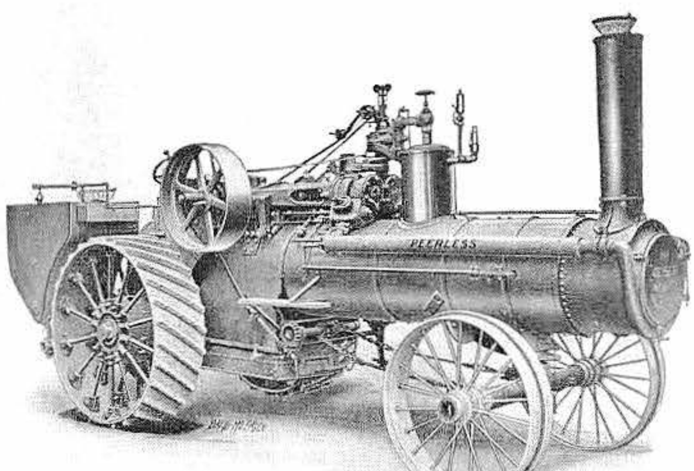


This 40 H.P. Peerless steam traction engine, built in 1919, appeared at the Tioga County Early Days show at Whitneyville, Pa. In 1848-1850 Peter Geiser built his first grain thresher at Smithburg, Md.

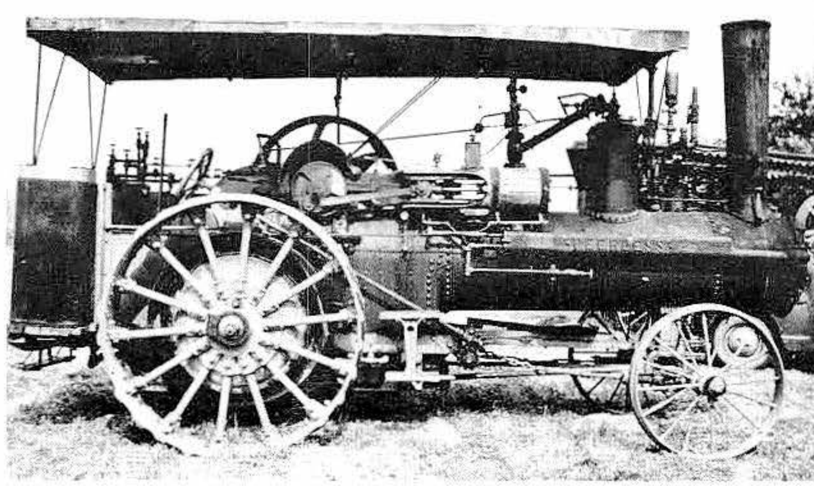
Marketed as a Peerless, this 40 H.P. Peerless steam traction engine was built in 1916. This picture is from a 1916 Emerson Brantingham Co. catalog. In 1912, the Geiser Mfg. Co. sold out to the Emerson Brantingham Co. of Rockford, Ill. In 1916, this company was marketing under the name Reeves-Peerless-Geiser Machinery Co.



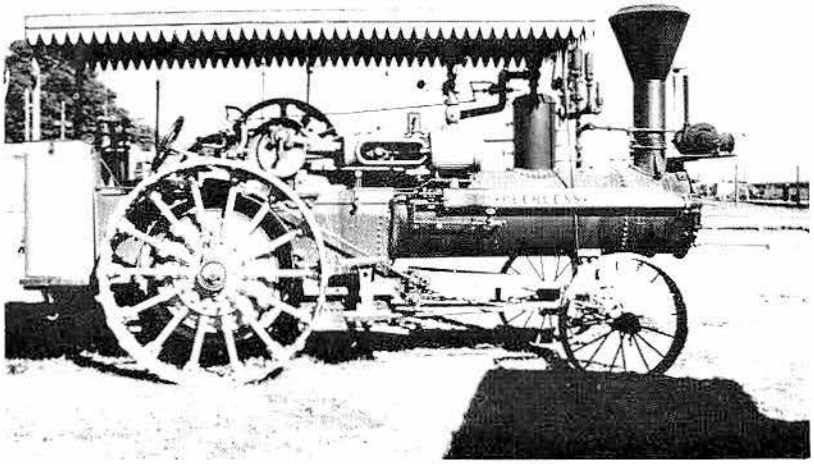
A good size engine was the 1914 Z Model 40 H.P. Peerless double cylinder, double drive engine. This engine was built especially for heavy work, such as hauling logs, lumber, or ore, road building, contractor's use, or plowing. The drive wheels were six feet in diameter, and were made entirely of iron and steel. The spokes were made of solid steel and each wheel was equipped with two rows of such spokes. There was no friction clutch used on this engine. On the engine were mounted two water tanks, with a combined capacity of 540 gallons. A coal box of about 1,000 lbs. capacity was attached to the engine right below the fire door. This engine rested on springs, which made for traveling over rough, rocky roads, as far superior to a solid engine as a rubber tire buggy was to a farm wagon.



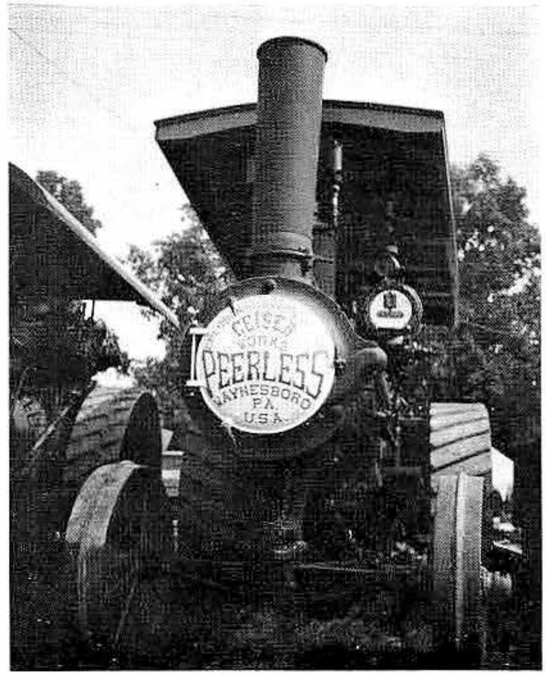
This 40 H.P. Peerless steam traction engine, built in 1921, is owned by Dale Hempfing of Glenrock, Pa. It is at the Early American Steam Engine Society show at Stewartstown, Pa. In 1855 the Geiser Co. was organized, and entered into an agreement with Jones & Miller, Hagerstown, Md., to manufacture Geiser threshers. Then, in 1860, the Geiser Mfg. Co. moved to Waynesboro, Pa., on part of the land purchased by George Frick two years before.



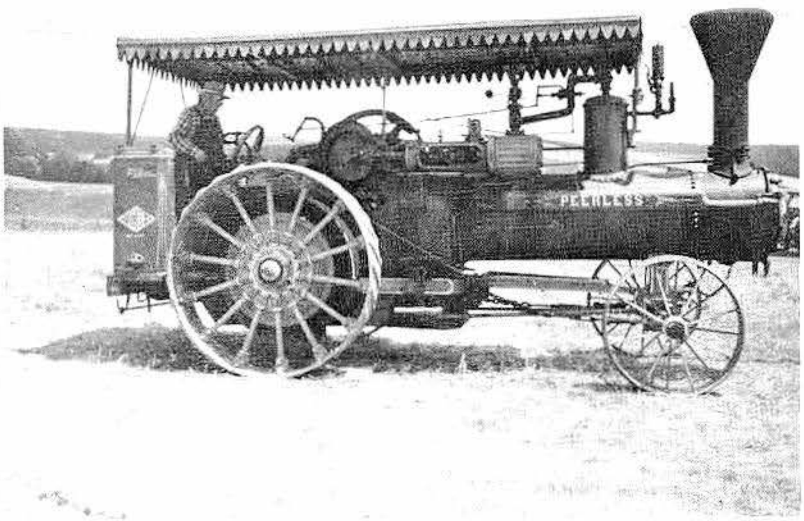
Peerless (Geiser Mfg. Co.)



This 50 H.P. Peerless steam traction engine, built in 1917, is owned by C. A. Fisher of Stoneboro, Pa. It is appearing at the Pioneer Steam and Gas Engine Society show at Meadville, Pa. In 1869 the Geiser Mfg. Co. was incorporated and turned out 400 threshers.



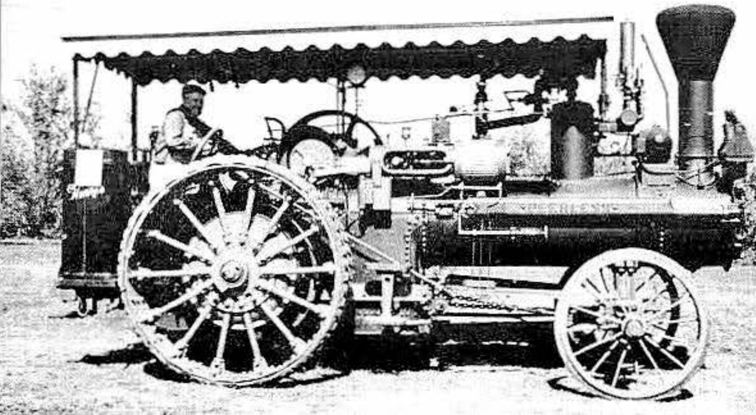
Seen from head-on, the 1917 Peerless 50 H.P. steam traction engine presents a nice clean and conventional appearance. This engine is owned by Ben Davis of Glen Bernie, Md. It is appearing at the Williams Grove Historical Assn. show at Mechanicsburg, Pa. In 1881 engineer Frank Landis, not bothering too much about patents, took the best engine designs he could find and assimilated them into the machine which the Geiser Co. began to manufacture. Geiser took on the name "Peerless" in order to compete with the Frick Co., which was marketing under the name "Eclipse." By 1917, when this engine was built, the cast smoke-box door carried the inscription, "Emerson-Brantingham Co., Geiser Works, Waynesboro, Pa."

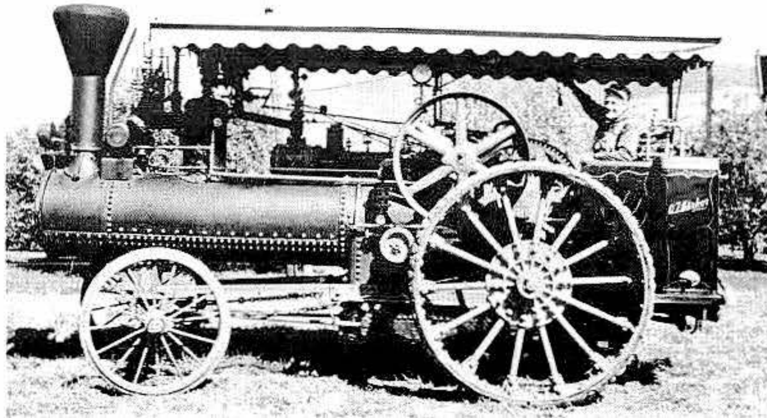


Chuffing happily across the grounds at the Steam-O-Rama show of the Early American Steam Engine Society is this 50 H.P. Peerless, built in 1923. The show is held at Stewartstown, Pa. The Geiser works stopped producing steam traction engines in the late 1920s, but continued in other facets of the machinery trade until 1940 when the factory burned to the ground. It was never rebuilt. The only trace of the factory remaining today is the brick office building, which has been converted into a dwelling.

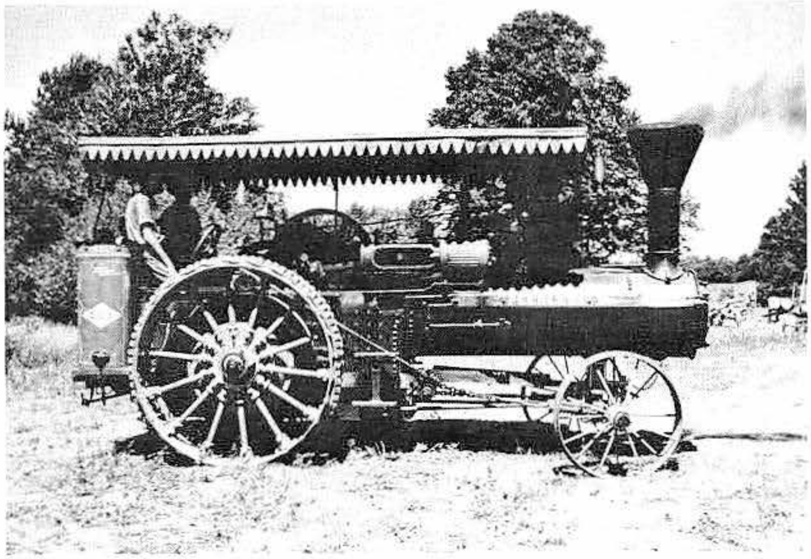
This is the engine side of the 50 H.P. Peerless engine owned by Arthur F. Harker of Hollidaysburg, Pa.

This 50 H.P. Peerless, with the fancy scalloped canopy and pin-striped water tanks, is owned by Arthur F. Harker of Hollidaysburg, Pa. It was built in 1923. Mr. Harker is shown here preparing to let loose a blast from his multiple whistles during the Morris Cove Pioneer Power Reunion at Martinsburg, Pa.



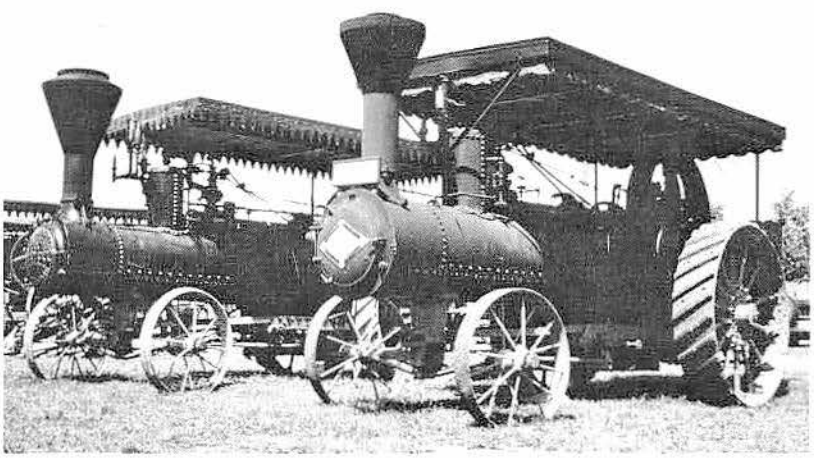


Peerless (Geiser Mfg. Co.)



This 50 H.P. Peerless steam traction engine, built in 1923, is owned by Herman Walcott of Allendale, Mich. It is here steaming at the River Bend Steam & Gas Assn. show at Allendale. The engine bed and crank shaft boxes were cast in one piece, thus insuring perfect alignment and removing all strain from the boiler. The cylinder was bolted to this frame and was interchangeable. The frame was fastened to the boiler with one solid connection and two steel plates, the plates being so placed as to make provision for expansion and contraction, which was very important in large engines.

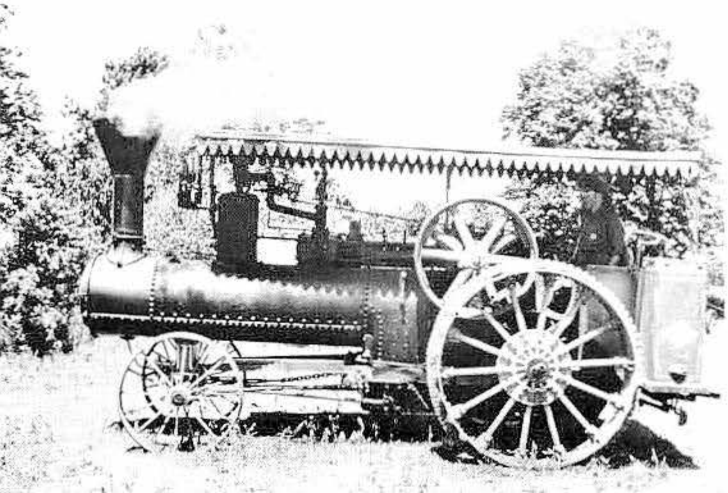
Seen from the front, the large locomotive bell and cluster of whistles are quite apparent on Mr. Harker's 50 H.P. Peerless. The 1923 vintage engine is nick-named "Nellie Belle." By this era, Emerson-Brantingham decided to play down the name "Peerless," and instead decorated the cast smoke-box doors with a large "E-B" insignia. Mr. Harker's engine wears rubber tires so that it can be used on local paved streets. Iron wheeled engines are not allowed on paved streets because the heavy cleats would crush the pavement. This would be a thresherman's view of the engine, with the belt hooked up on the right.

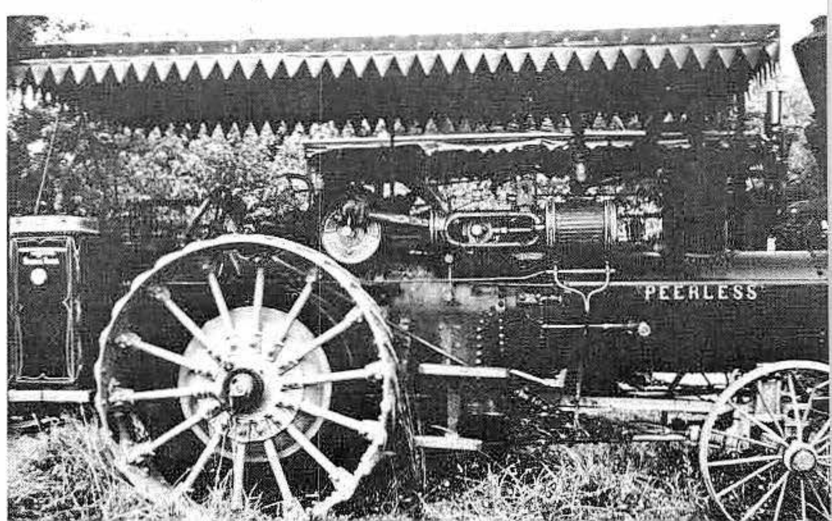


Nicknamed "Nora Jean," this 50 H.P. Peerless is owned by Sherd Doughman of Harrisburg, Pa. The engine, built in 1924, uses a very heavy disc and large crosshead and crank pins. These pins are hollow and are automatically lubricated from within and without, thereby furnishing a bearing surface large enough to remove almost all knocks and a lubricating device that virtually prevented overheating. Mr. Doughman's Peerless is shown here keeping company with another Peerless at the Rough & Tumble Engineers Historical Assn. show at Kinzer, Pa. Both engines have been fitted with the accessory canopy cabs.

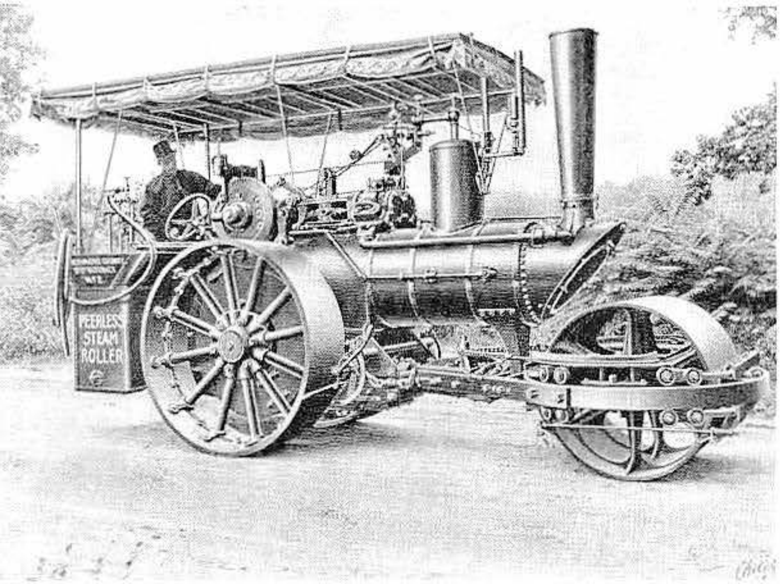
Here is the flywheel side of the 50 H.P. Peerless engine owned by Herman Walcott of Allendale, Mich. Mr. Walcott also has rubber tires on his engine.

Another variation of a 50 H.P. Peerless steam traction engine built in 1923 is this engine owned by George Derr of Mechanicsburg, Pa. It also appears at the Early American Steam Engine Society show at Stewartstown, Pa.

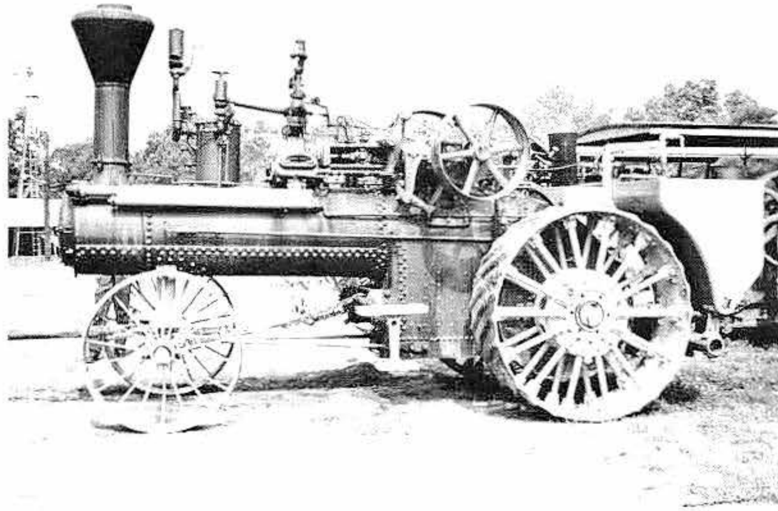




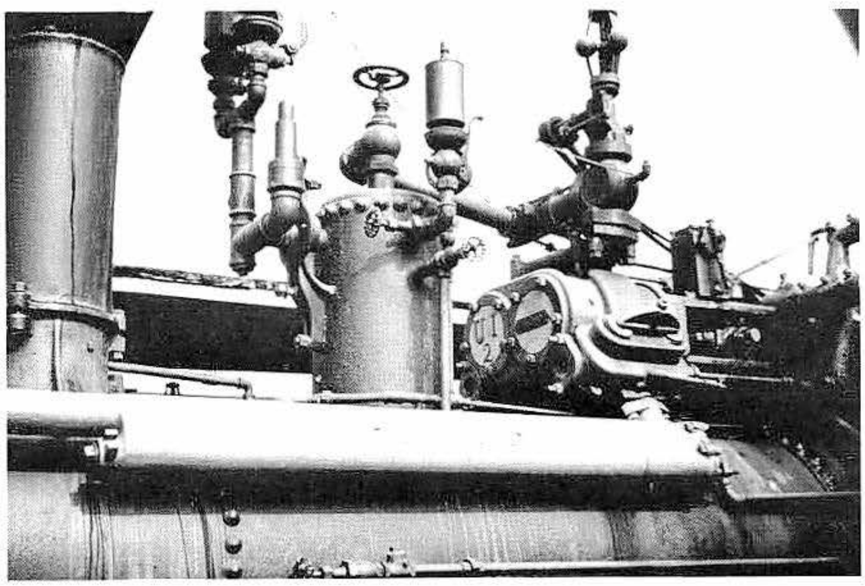
Peerless (Geiser Mfg. Co.)



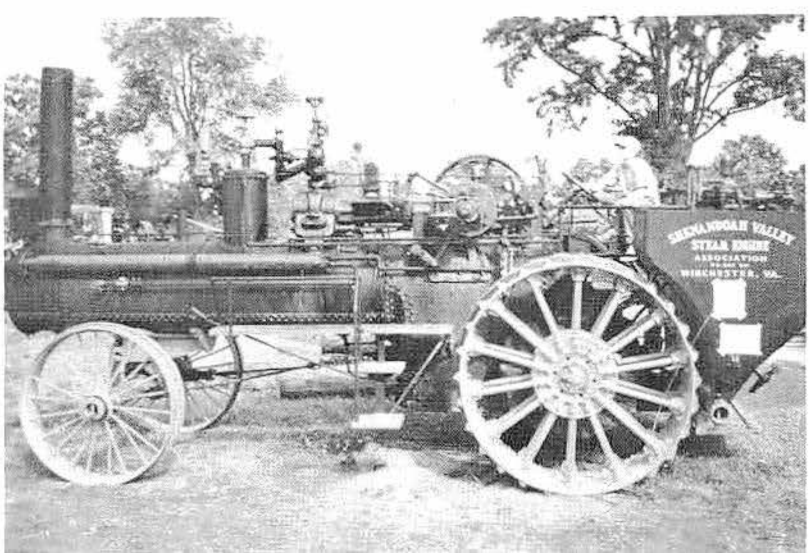
A 10-ton Peerless steam road roller, built in 1914 is shown working in Baltimore County, Md. The roller is a double cylinder engine. The smoke-box has been specifically designed to accommodate the front roller, which in itself rides in a very unique front carriage. Note the top hat on the engineer. This roller was equipped with the standard Peerless canopy top, with roll-up side curtains which would provide almost complete weather protection for the engine and crew. The roll-up curtains were a seldom purchased accessory.



Fitted with a set of extra-large water tanks is this 60 H.P. Peerless owned by Betsy Richwine of Williams Grove, Pa. This engine is a twin cylinder unit built in 1913. Note the springs fitted between the front axle and the steering chains. This was to lessen the road shocks on the steering mechanism, as the springs would absorb the initial jar of the front wheels hitting obstructions in the field or on the rough road of the day. This engine is appearing at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg, Pa.



Here is a good close-up of the steam dome and double cylinders on a 60 H.P. Peerless twin cylinder engine. This engine, Model UI-2, was built in 1913. The standard whistle is on the left of the dome, while two accessory whistles have been added immediately behind the stack. This engine is owned by Betsy Richwine of Williams Grove, Pa.



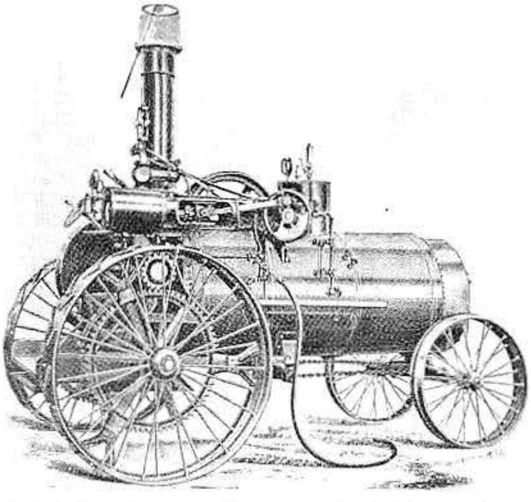
A really huge engine is this 120 H.P. Peerless built in 1912. This engine is owned by Robert Buakley & Ralph Lewin of Berryville, Va. It appears at the Shenandoah Valley Steam & Gas Engine Assn. show at Berryville. This is the largest engine built by Peerless. The engine was used to pull three big wagons filled with apples to the railroad where the apples filled a box car at each trip.

N. C. Peterson & Sons

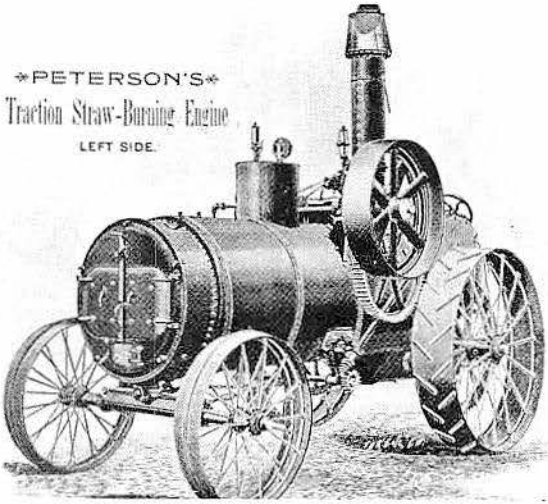
Norris Conrad Peterson, was born at Smith Falls, Ontario, Canada, in 1837. As a boy he learned the blacksmith trade and in 1857, he journeyed westward to the then frontier town of Sarnia where he established a blacksmith shop at the corner of George and Victoria Streets.

His business grew and a small foundry was added for the production of castings. Later, a machine shop and boiler shop were added. Two sons, James Norris and William Conrad, entered the firm when they grew up and the foundry became known as the N. C. Peterson and Sons Engine Works. In 1884 the first Peterson portable steam engine was built followed soon after by the first traction engines. These were wood-burning engines of the round water bottom locomotive type. For a straw burning engine, they later switched to the rear mounted return flue type as more satisfactory.

N. C. Peterson decided to retire at the turn of the century and the sons felt that, as future sales were most likely to be in the fast opening Northwest, it would be sensible to move closer to the market. Accordingly, in 1901, they closed the Sarnia plant and shipped all the equipment and several new straw burning engines to Winnipeg, Manitoba, where they established the Peterson Foundry and Machine Works. Winnipeg, in those days, had growing pains and gave the new foundry so many orders for municipal castings that it couldn't find time to get back into the engine business. When the company was able to consider building engines again, the days of the steam threshing engine were numbered. No Peterson engines were built in Winnipeg. The Peterson engines were of the single cylinder, rear mount, return flue type of steam traction engine.



In 1891 the N. C. Peterson & Sons Co. of Sarnia, Ontario, began to produce a series of single cylinder, return flue steam traction engines rated at 12 H.P. This is the cylinder side. The engine appears to be a rather conventional unit for the era. It used a jacketed boiler and steam dome. It appears that neither fuel bunker nor water tank were attached, and therefore a tender would have had to be used. In effect, many of these early steam traction engines were really portable steam engines fitted with traction gears and a steering system. They were able to move short distances under their own power, but the lack of self contained water and fuel supplies meant that any long-distance travel would necessitate a tender being attached.



Double doors were used on the forward smokebox of the 1891 N. C. Peterson & Sons return flue steam traction engine. This is the flywheel side of the 12 H.P. unit. Peterson built its first steam portables in 1884, and by 1890 was producing traction engines. One of these engines exists today at the Manitoba Agricultural Museum in Austin, Manitoba. What makes this engine so unusual is that the museum bought it from the old Peterson foundry. When it was delivered to the museum, the boiler had never had a fire in it, and several of the parts were still in their original packing cases.

Port Huron Co.

The first thresher shop in Michigan was started by William Brown in 1851 at Battle Creek. The firm Upton, Brown & Co. succeeded Wm. Brown in 1859. The corporation Upton Manufacturing Co. succeeded Upton, Brown & Co. in 1874. The Upton-Port Huron traction engine was first made and sold in 1882. It was original in several important respects; and it earned a high reputation. Arrangements for moving the business from Battle Creek to Port Huron were made in 1884. Return flue boiler traction engines were built by Port Huron as early as 1886.

The name Port Huron Engine & Thresher Co. was adopted, by amending the company's by-laws, in the fall of 1890. Port Huron Rusher threshers, and Port Huron traction engines, were introduced in 1891, and they made good records.

Port Huron in 1896 developed the cylinders which proved to be the best of all engine cylinders in the history of the thresher trade—the Port Huron-Woolf Compound.

A malleable iron foundry was added to the plant equipment in 1903. At that time Port Huron Engine & Thresher Co. was the only thresher manufacturer making malleable castings.

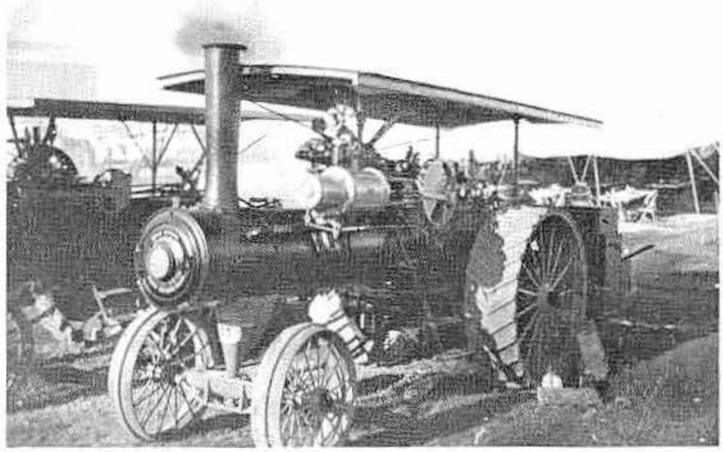
Double and single compound traction engines, with boiler tubes 9 feet long—"Longfellows"—were advertised and sold to a limited extent in 1907.

At the end of the threshing season of 1908, Port Huron received scores of reports from users and experts to the effect that Longfellow-Port Huron engines had proved to be the most economical and the most satisfactory traction engine in the history of the thresher trade; that they required much less fuel and water than did any other makes.

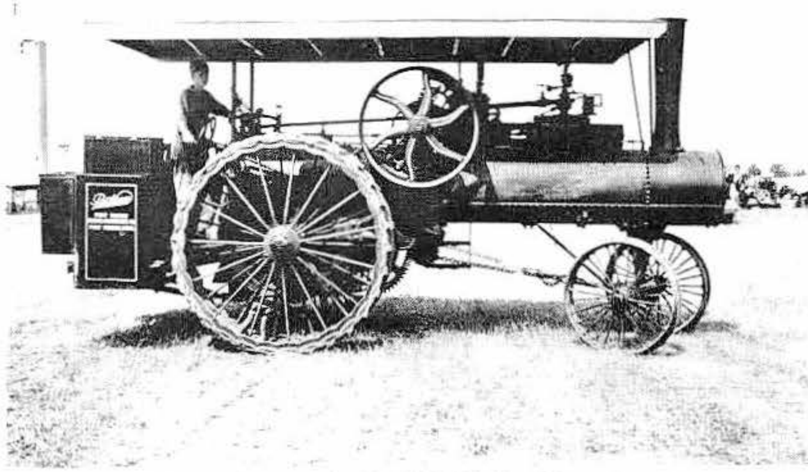
The difference between the Port Huron-Woolf and other Woolf compound engine cylinders and valve gears, was the economy in the use of fuel and water. The Grime-Woolf-Port Huron valve gear, which was developed in 1891 and improved in 1893, gave the Port Huron compound engine practically a square cut-off (few if any other engines had it). Port Huron said that this gave a saving in fuel of 3 to 4%

Port Huron made the following: simple cylinder steam traction engines; compound traction engines; double compound steam traction engines; Longfellow double and Longfellow single steam traction engines; combination roller and hauling steam traction engines; the Port Huron regular road roller; portable steam engines on sills or trucks; water tanks for wagons; the Port Huron Rusher threshers; a complete line of sawing machinery; a hay press baler; Port Huron corn shellers, and for hauling by steam traction engines they made special wagons or "Cars" suitable for various purposes.

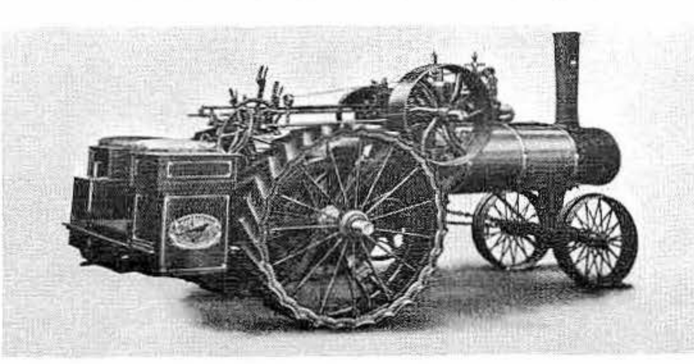
The Port Huron Co. made about 8,600 steam traction engines.



This 19-65 H.P. Port Huron steam traction engine, built in 1915, is owned by Dean Vannoy of Altoona, Iowa. It is steaming at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa. The engine is a compound.

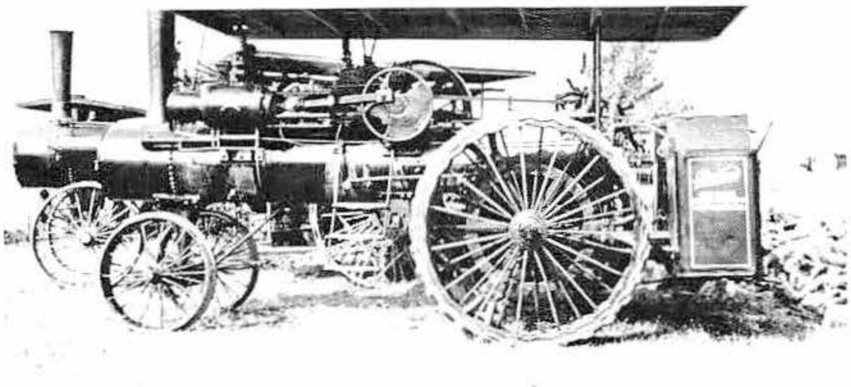


This is the flywheel side of a 19-65 H.P. Port Huron steam traction engine built in 1912. This engine is owned by Carl Tittle of Howell, Mich., and appears at the Michigan Steam Engine & Threshers show at Mason, Mich. Carl Tittle's engine is a compound. Each boiler was tested after attachment of the engine with 250 pounds cold water, and later with 185 pounds steam pressure.



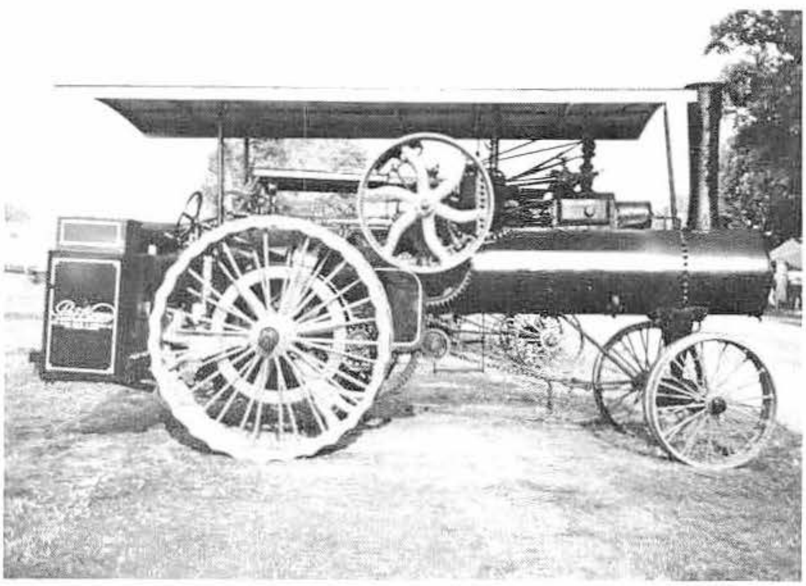
Promoted as the most economical traction in the world was the 19 H.P. Port Huron single cylinder Longfellow, built by Port Huron Engine & Thresher Co. of Port Huron, Mich. This is a 1909 model.

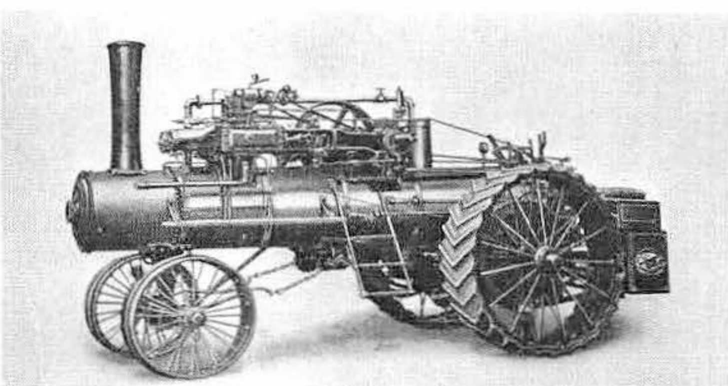
Port Huron Co.



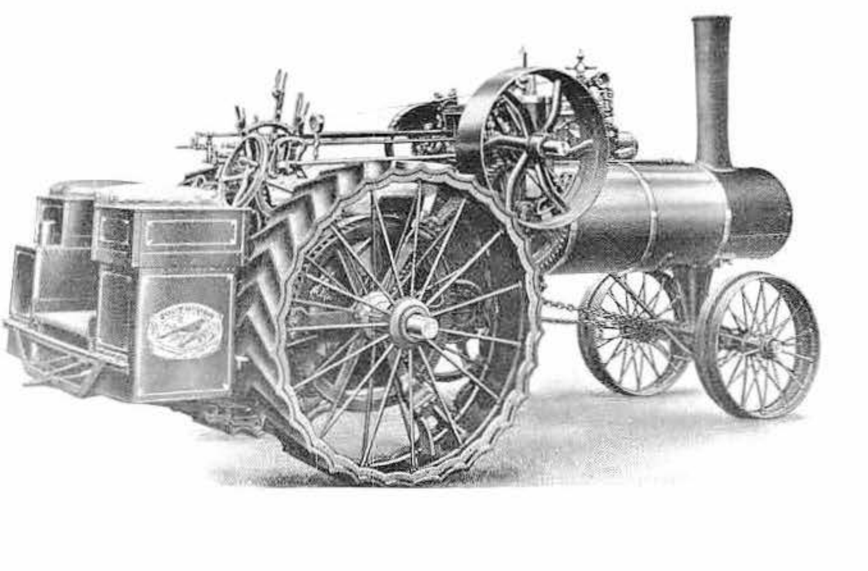
This is the cylinder side of the 19-65 H.P. Port Huron steam traction engine owned by Carl Tittle of Howell, Mich. The water tanks attached to this engine are square shaped; better than round for occupying space and better in appearance. The two tanks on the engineer's platform were made of steel and had a total capacity of 100 gallons.

This 19 H.P. Port Huron steam traction engine, built in 1918, is owned by W. W. Dill of Houston, Ohio. It appears at the Darke County Steam Threshers Show at Greenville, Ohio. This engine is a compound. In 1891 the name "Port Huron Engine & Thresher Co." was adopted. Port Huron Rusher Threshers, and Port Huron Traction Engines, were introduced in 1891, and made good records thereafter.



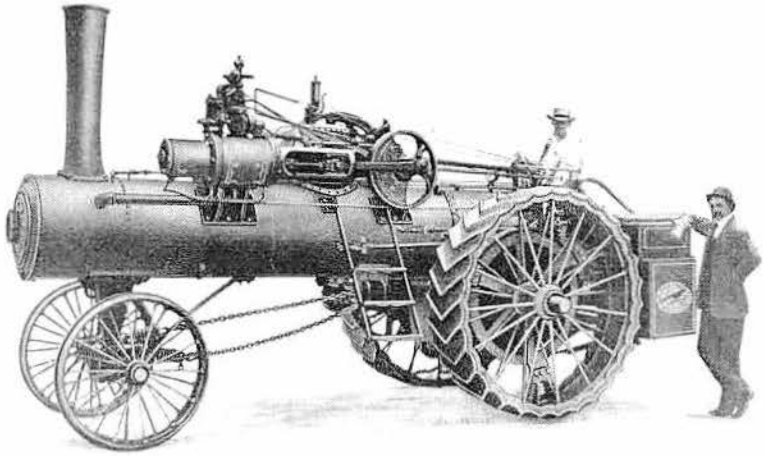


The 22 H.P. Longfellow-Port Huron steam traction engine was a double cylinder unit. The double engines were equipped with friction clutch, and also had a lock pin device providing for traction operation without use of the clutch. This engine was built in 1909.

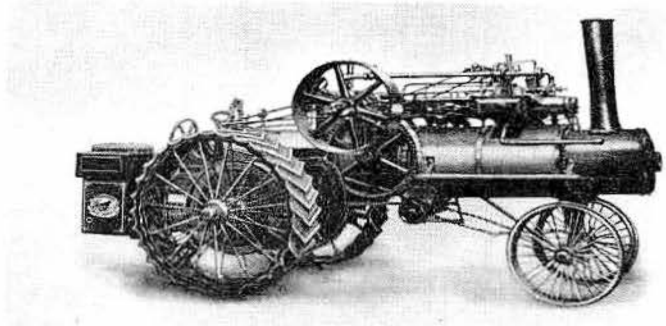


A 24 H.P. Longfellow-Port Huron steam traction engine, single cylinder. This picture is taken from a 1909 Port Huron Engine & Thresher Co. catalog. This engine used the high pressure boiler. The valve was the popular balanced piston valve. The steam chest completely surrounded the valve.

Port Huron Co.

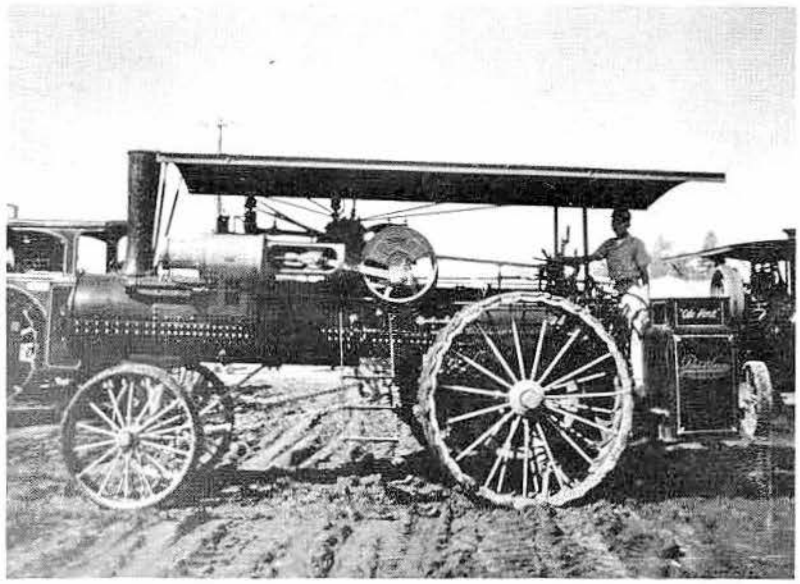


No lightweight was this 22 H.P. Port Huron steam traction engine with its compound cylinder. This picture was taken in 1909. This engine used the Woolf-Port Huron compound cylinder working at 175 pounds pressure. There was very little loss by condensation of steam during passage to the large cylinder.

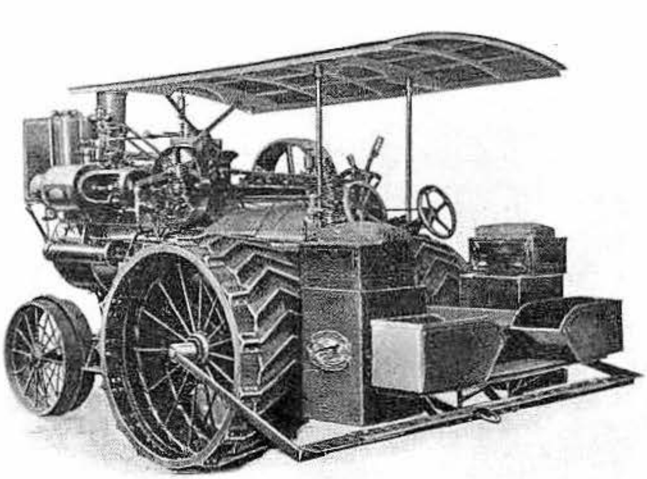


The company claimed that more than $150 a season could be saved by using the 30 H.P. Port Huron double tandem compound, "Longfellow." This engine had four cylinders, but used only two valves. This double tandem compound was greatly superior to a cross compound, in that it avoided the need of a receiving chamber between the two cylinders. In such a chamber, steam would condense and lose power.

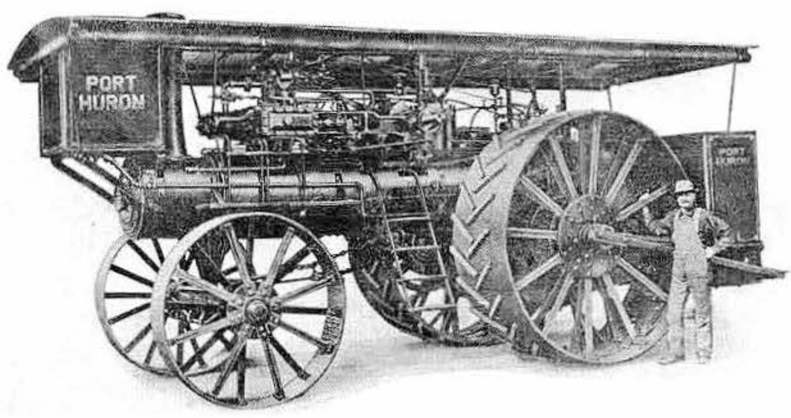
This 24 H.P. Port Huron compound steam traction engine, built in 1921, is owned by E. J. Saltzman of Windwest, Iowa. It is operating at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa. This engine is a tandem compound, with both pistons on the same rod. It was first sold in Kansas, then was resold in Iowa.



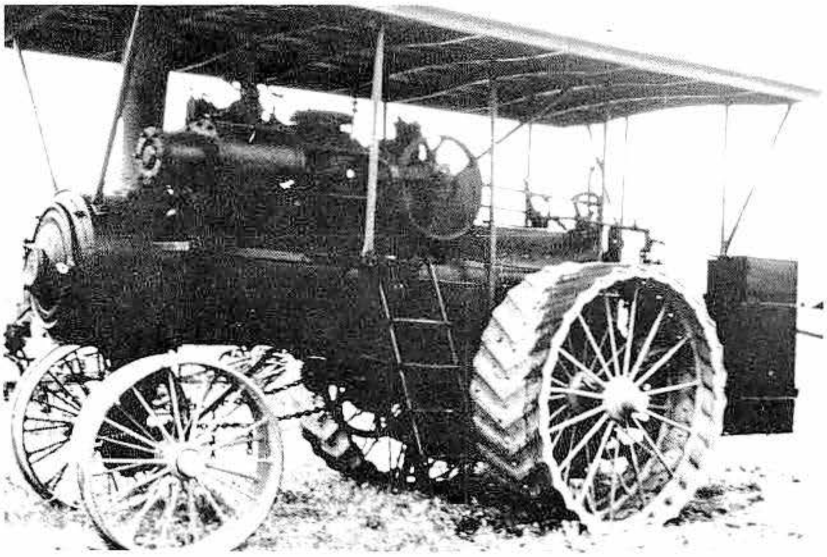
The 32 H.P. Port Huron steam traction engine was designed for heavy plowing. This engine is a steel geared compound steam traction engine used especially for plowing and heavy hauling on unimproved roadways. This engine could also be used for threshing. It was built in 1909.



Of truly tremendous size was the 25 H.P. Port Huron double compound steam traction engine. The platform and front tanks, held 480 gallons total water capacity. This engine had a canopy top and curtains, drive wheel extension rims and detachable lugs. The diameter of the drive wheels was 90 inches, with a 34-inch face, including extensions. The diameter of the front wheels was 60 inches, with a 14-inch face. It had a gear oiling outfit.

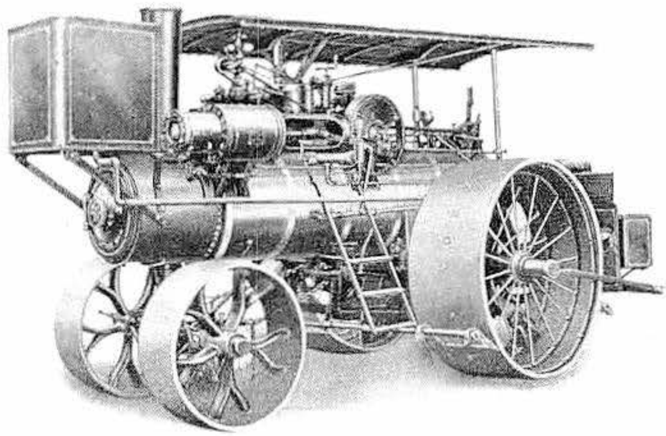


Port Huron Co.

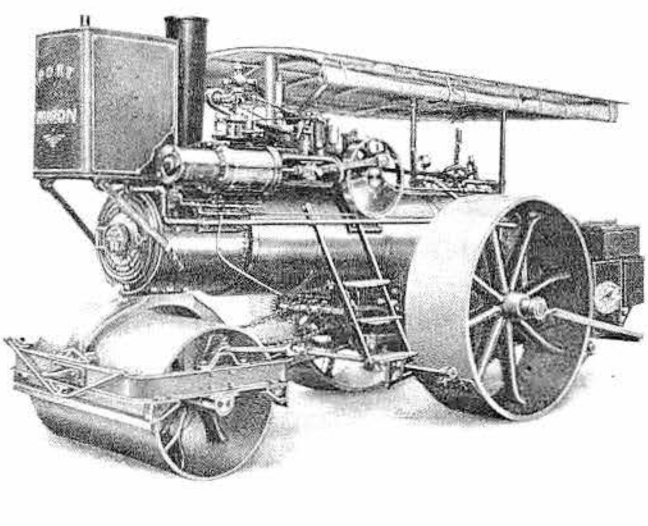


This 32 H.P. Port Huron steam traction compound engine was built in 1915. The Port Huron Co. made about 6,030 steam traction engines during its production span.

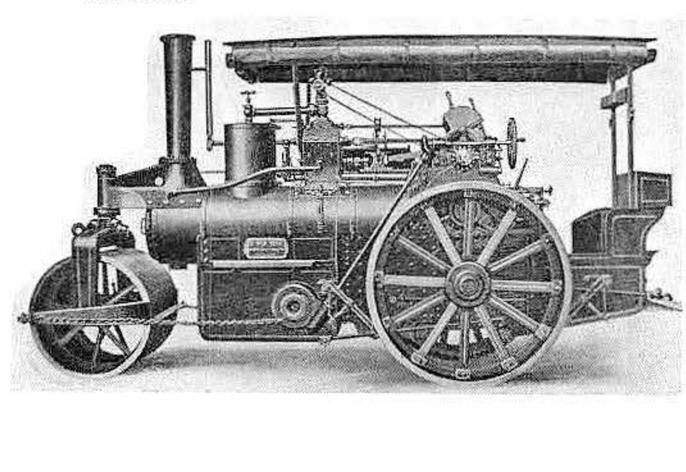
Here is an unusual one. It is a 32 H.P. Port Huron compound steam traction engine, designed as a combination roller and tractor for hauling on public roads. This engine was used especially for heavy hauling on improved roadways, or public roads or streets, where the rollers would not damage the roadway, as would cleats. In fact, it is very likely that such a roller actually would improve the roads of the day. This unit was built in 1909.



This is the 32 H.P. Port Huron regular road roller with compound cylinder. Built in 1909, this roller was suitable for all roller work in the construction and finishing of plain macadam roads and tar macadam pavements, and for rolling and compacting embankments, fills, subgrades, earth roads, gravel roads, and shale roads. It also had sufficient power and equipment for hauling road making materials and graders, or for driving rock crushers.



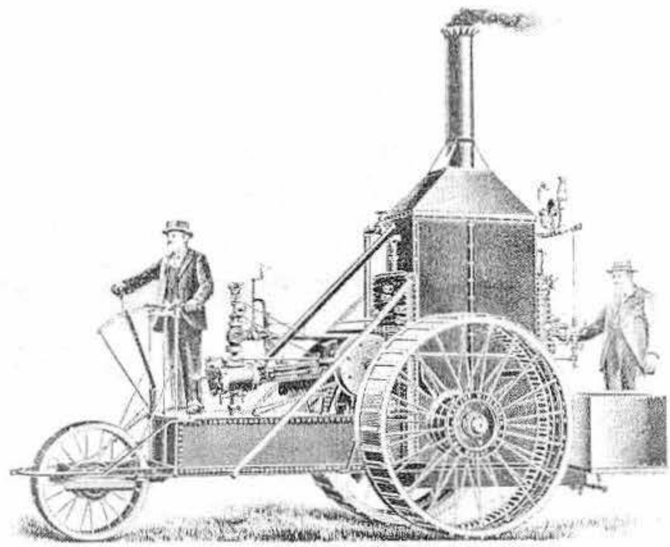
This 1912 Port Huron steam road roller was marketed as "the New York Huron Standard." The roller was suitable for all roller work and for hauling and powering moveable construction machinery.



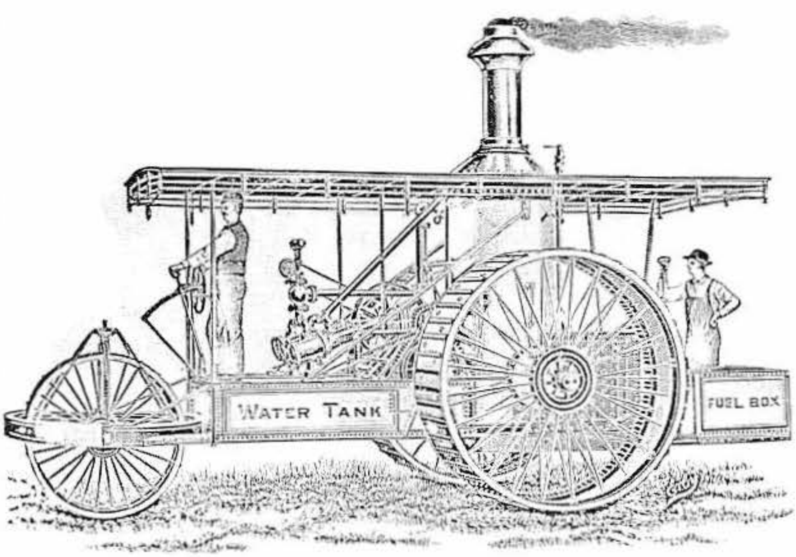
Jacob Price

On January 14, 1890, Jacob Price patented his "field Locomotive." This machine resembled somewhat its predecessor, Remington steam traction engine, with its vertical boiler set between the two large drive wheels, and the single wheel in front which was used for steering. The engines were of two sizes, the large one weighing nine and one-half tons and the smaller one six and one-half tons. Their speed, when plowing was about three miles per hour; when traveling without a load, about five. The plows of the larger machine cut twelve feet; of the smaller, nine. Capacity of the larger was three to four acres per hour; of the smaller, two to three. These engines handled plows under all conditions with the utmost ease.

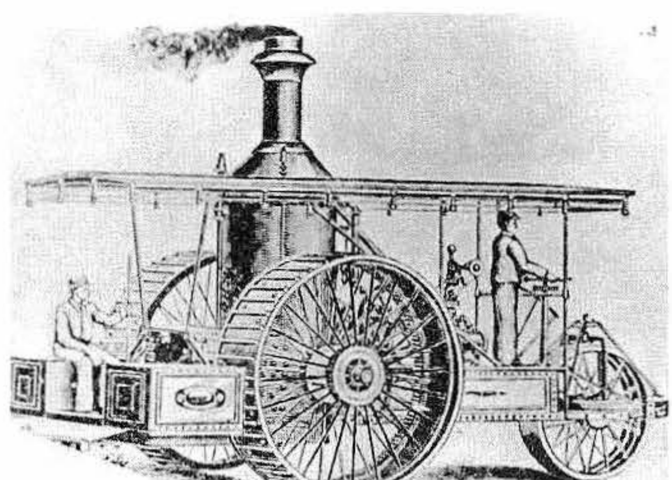
The Jacob Price steam traction engine was built for Jacob Price by J. I. Case Co., Racine, Wisconsin.



This strange looking thing is a 40 H.P. Jacob Price steam traction engine built by the J. I. Case Co. of Racine, Wis., for the Jacob Price Co., also of Racine. Price called his steam traction engines "field locomotives." He began in Petaluma, Cal., by building hay presses, then moved his operation to San Leandro, Cal. By 1890, when this vehicle was built, he was in Racine, Wis., having the Case company build his machines. Little is known about the success of these engines, but a close look at some of the engineering and design features would lead one to suspect that the machines were less than practical.

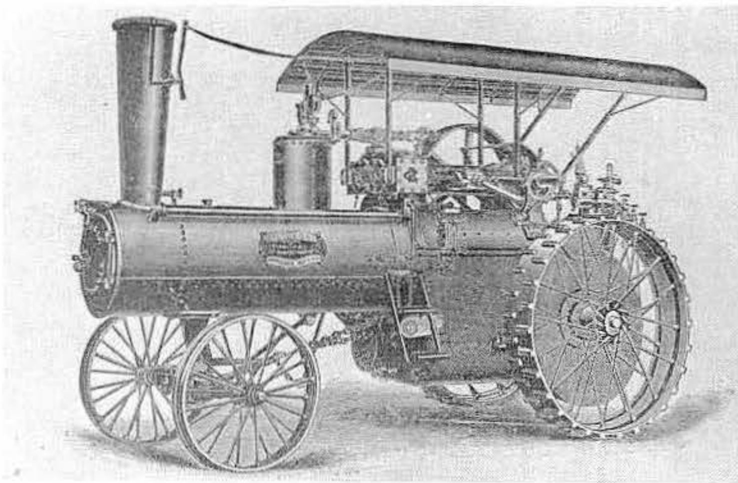


Sometime after the first Jacob Price design of 1890, the company came out with this model of its 40 H.P. engine. It also offered a smaller engine of undisclosed horsepower. Apparently both engines were similar in appearance and design, and differed only in size and strength. The larger engine weighed 9½ tons, could pull a gang of plows with a 12-foot cut, and could plow 3 to 4 acres an hour. The smaller engine weighed 6½ tons, could pull a gang of plows with a 9-foot cut, and could plow 2 to 3 acres an hour. The company claimed a plowing speed of 3 M.P.H. for either engine, and a road speed of 5 M.P.H.



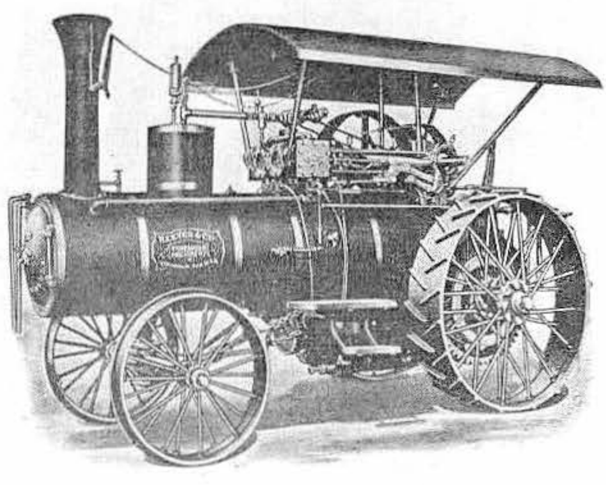
By 1893 the Jacob Price Co. had modified its engine to this point—still strange looking, but also showing more practical design features. The company continued to produce the engine in two sizes, a 40 H.P. model and a smaller version of undisclosed horsepower. All Jacob Price machines required two men for operation—an engineer and a fireman. The machines resembled somewhat the Remington and Best engines made in San Leandro in the 1880s. It is known that Jacob Price was associated with these engines before moving to Racine, Wis., and having the Case Co. build his engines beginning in 1890.

Reeves Co.



Built in 1901 was the 13 H.P. Reeves steam traction engine with double simple cylinders. The boiler was made of the very best flange steel boiler plate, tested to 60,000 lbs. tensile strength. When made up, the engines were again tested by cold water and steam up to a much higher pressure than was ever required in actual use.

The Line
REEVES-PEERLESS-GEISER MACHINERY



This is the 1911 version of the 13 H.P. Reeves steam traction engine with double simple cylinders. This engine had steps on the side, reverse gear, and a jacketed boiler. The engine's governor was of the horizontal type. This was adopted because it was felt to be the most satisfactory for traction engine use. The spindles, bearings, and oil chambers, being in a horizontal position, retained the lubricant longer and gave increased wear. Of greater importance was the fact that the constant jolting on the road so often affected the gravity balls on the vertical governor. This would cause an irregular supply of steam to the cylinder, with a consequent jerky motion that strained every working part of the engine mechanism. On the Reeves horizontal type, the gravity balls counterbalanced each other so as to completely neutralize the jarring and jolting of the engine on rough roads.

The Reeves Company of Columbus, Indiana, was established in 1874 and incorporated in 1888. About 1885, being builders of threshers since 1874, the company bought Ritchie & Dyer Co., to get an engine to team up with their threshers. The engine was a double cylinder, rear mounted.

The Reeves 90 H.P. cross compound, Canadian Special steam traction engine had its traction gearing wholly enclosed in a sheet steel housing. This insured long wearing, as it prevented dust and dirt from getting into the grease and oil and the consequent cutting of this dirt. The housing also prevented accidents apt to occur when the gears were wholly exposed.

The full jacket on boiler and dome was considered very essential, especially for the large engines generally used in the Canadian Northwest, where low temperatures were prevalent during a large part of the year. The jacket on the Reeves Canadian Special engine comprised an air-space next to the boiler shelf, composed of close lagging of wood with the outer covering of heavy, smooth iron held in place and trimmed by brass bands. Drain pipes carried the cylinder drippings down the side and away from the jacket so there was no rust or corrosion from this source.

The jacket prevented a very considerable amount of heat radiation from the boiler and dome. As heat represented fuel consumption, heat retained for the generation of steam represented a saving of fuel, labor and wear.

The Reeves friction power guide was a very simple but effective power-steering device. It could be attached to all Reeves engines of 20 horse power and larger sizes. It consisted of a friction disc disengaged from the band wheel but which could be brought into contact with either the right or left of the band wheels by the use of a lever conveniently located.

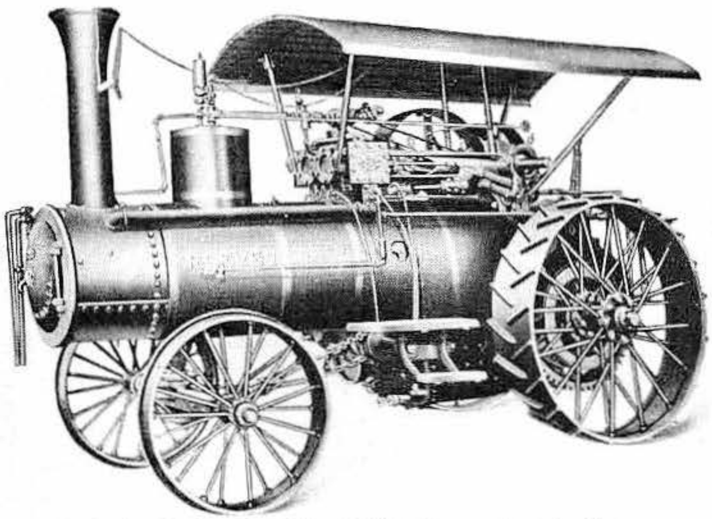
A chain engaging with a sprocket wheel attached to the disc shaft and another attached to the steering shaft transmitted the power and was easily controlled by the operator. The use of this attachment was recommended only where the engine was to be used mainly for traction purposes, and was furnished only on special order at extra price.

A hinged spring seat was provided for the engineer. It was mounted high so he could sit down while operating the engine. The seat for the fireman hinged back out of the way or could be removed entirely as occasion required.

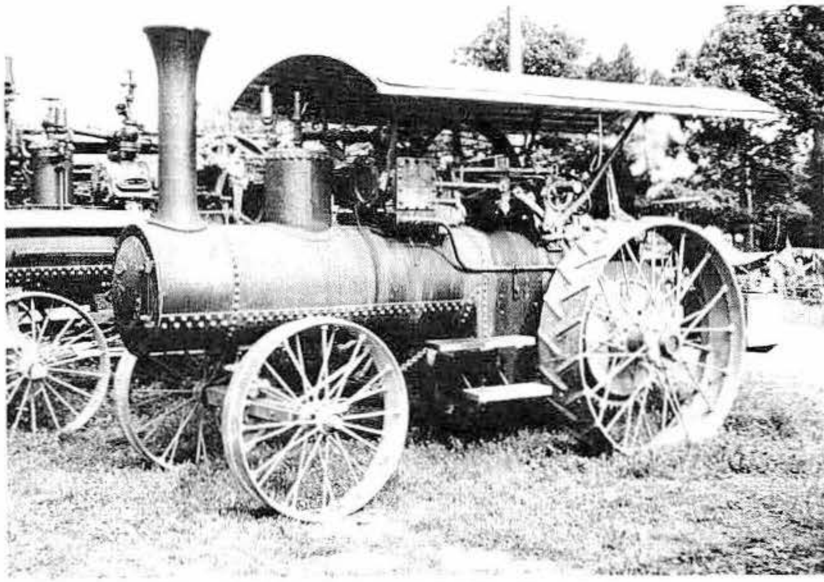
The Reeves Co. made the following: cross compound steam traction engines of double or simple cylinder; Reeves water tanks; Reeves Compound Separators; steel engine tender; clover huller, feeder and blower; Reeves sawmills; steel baling press; flexible frame steam lift engine; gang plow, and cylinder corn sheller.

Reeves & Co. continued in business till 1912, when Emerson-Brantingham bought the firm. That old Rockford, Ill., firm, which went back to John H. Manny in pre-Civil War days, gathered three or four good names in the tractor field. Big Four, Geiser, and Reeves were all advertised by E.-B. for a few years. In 1925, Emerson-Brantingham closed down the Reeves plant.

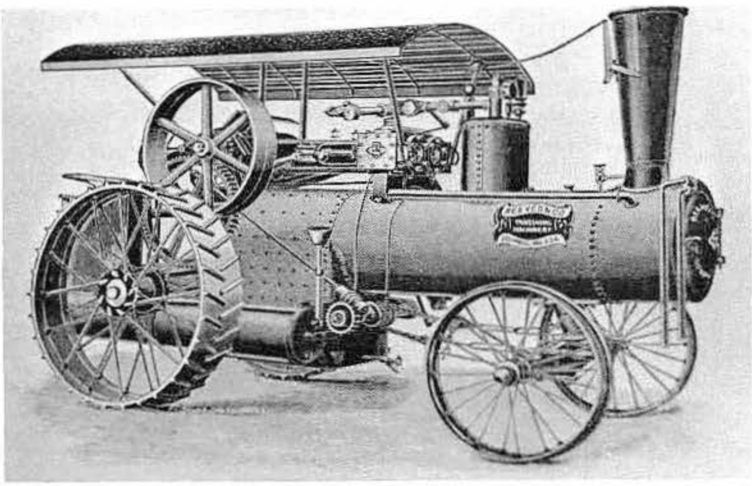
The Cummins Engine Co., of modern diesel fame, arose from the ashes of the old Reeves plant, when a local banker put some men to tinkering with a Sears, Robuck gas engine in order to develop something to give jobs to a town full of skilled labor.



This is the 1913 version of the 13 H.P. Reeves steam traction engine with double simple cylinders. This engine had steps on the side, reverse gear, and a jacketed boiler. This engine's jacketed boiler comprised a wood covering next to boiler, an air space underneath, and a heavy covering of Russia iron held in place by brass bands.

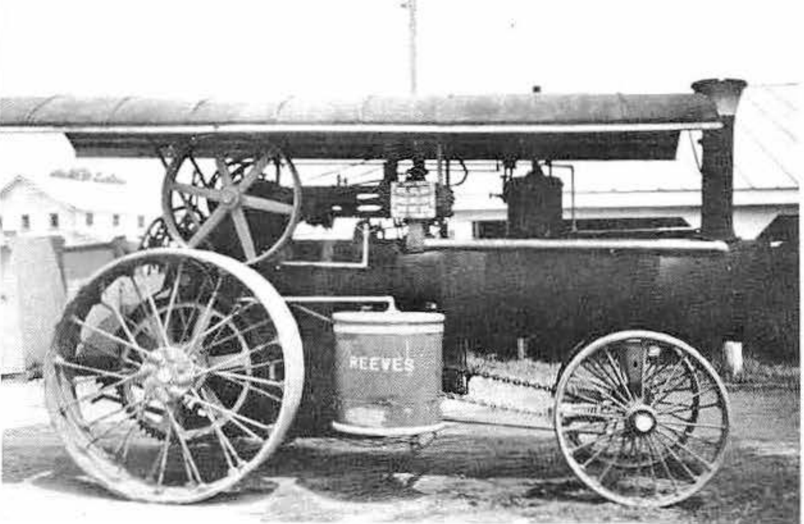


This 13 H.P. Reeves steam traction engine, built in 1916, is owned by Jim Richwine of Mechanicsburg, Pa. It is shown at the Williams Grove Historical Steam Engine Assn. show at Mechanicsburg. This engine was built by Reeves & Co. of Columbus, Ind. Reeves was established in 1874 and incorporated in 1888. In about 1885, Reeves bought the Ritchie & Dyer Co. to get an engine to team with the Reeves thresher, which had been in production since 1874.



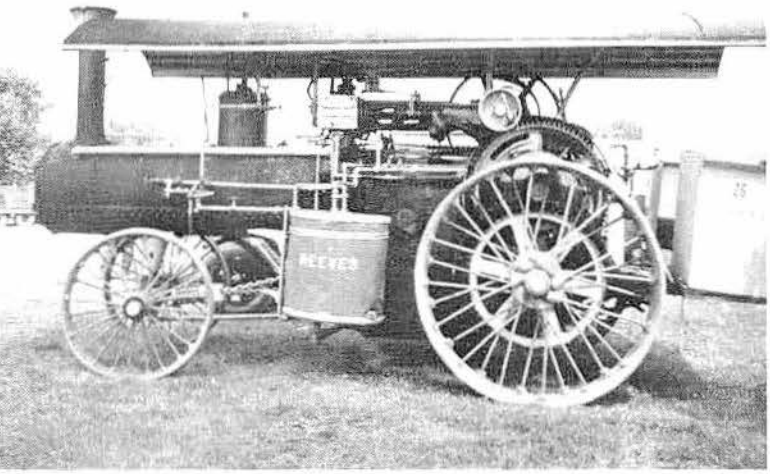
The 16 H.P. Reeves steam traction engine, double cylinder, simple, was built in 1901. This engine's rear axle and countershaft was made of heavy steel, and was placed at the rear of the boiler in heavy cast boxing with long bearings. The gearing was attached to the axle and countershaft, which extend across the engine. The compensating gear was very strong and was adjusted to curves of any radius. The gearing was covered, thus keeping out stones and dirt.

This 16 H.P. Reeves steam traction engine, built in 1915, is owned by Rodney Kiner of Westerville, Ohio. It is puffing away at the Miami Valley Steam Threshers Assn. show at London, Ohio. Reeves & Co. continued in business till 1912, when Emerson-Brantingham of Rockford, Ill., bought the firm.



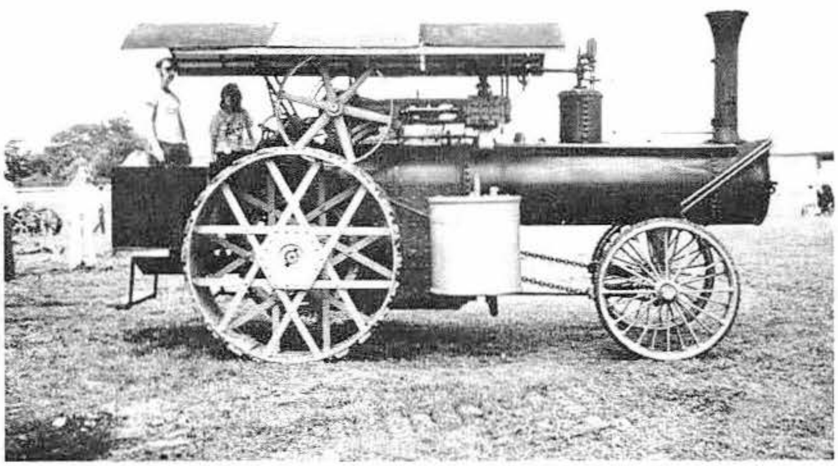
This 16 H.P. Reeves double simple steam traction engine, built in 1906, is owned by Lyle Hoffmaster of Bucyrus, Ohio. Nothing is known of the engine's early history until it was shipped into Monroe County, Ill., about 1920 where it threshed and drove a saw mill until 1932 when the boiler became unsafe. The Knoblee Machine Shop traded for it and did a complete rebuilding job, including a new butt and strap boiler built by John Nooter of St. Louis. Fred Schneider then purchased the engine and ran it for the next twenty years, again threshing, using a 36-inch Belleville separator and again sawing lumber. Mr. Schneider also used the engine to press cider, bale hay and grade roads. Hoffmaster purchased the engine from Schneider in 1952, but it was not restored until 1962 and was first exhibited at the Mount Pleasant Midwest Old Settlers and Threshers Reunion that year.

Reeves Co.



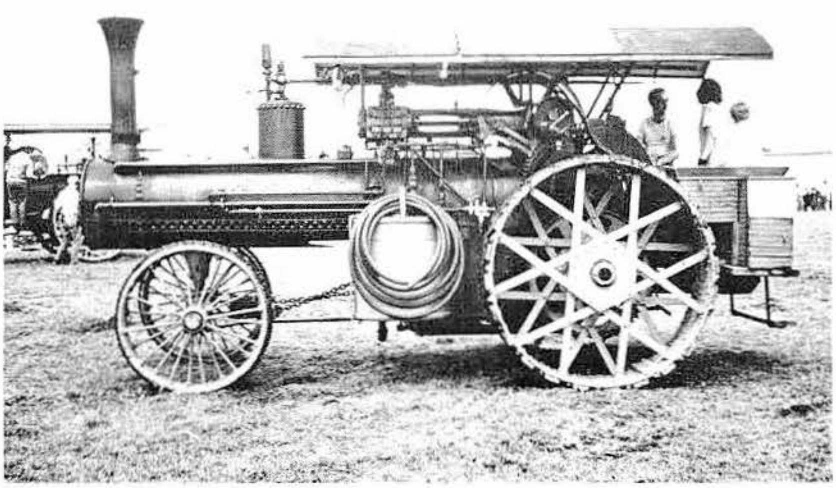
This is the cylinder side of the 16 H.P. Reeves owned by Rodney Kiner of Westerville, Ohio. This engine is fitted with both platform and side tanks for extra water supply.

Taking on water in the old, approved way—via a horse drawn water wagon—is this 16 H.P. Reeves Reeves built in 1915. This engine is owned by Ralph A. Weidman of Wooster, Ohio, and is participating in the Tuscarawas Valley Pioneer Power Assn. show at Dover, Ohio. The team of Belgians are owned by Doran Widder & Sons. They live in Sugarcreek, Ohio.



REEVES & COMPANY

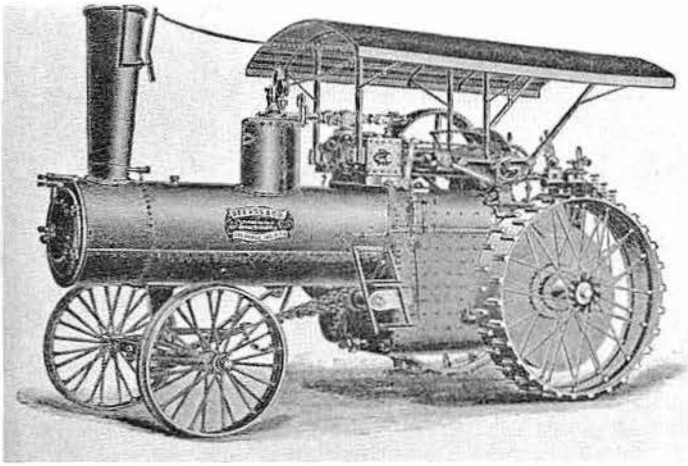
This is the flywheel side of the 16 H.P. Reeves owned by Ralph A. Weidman of Wooster, Ohio.



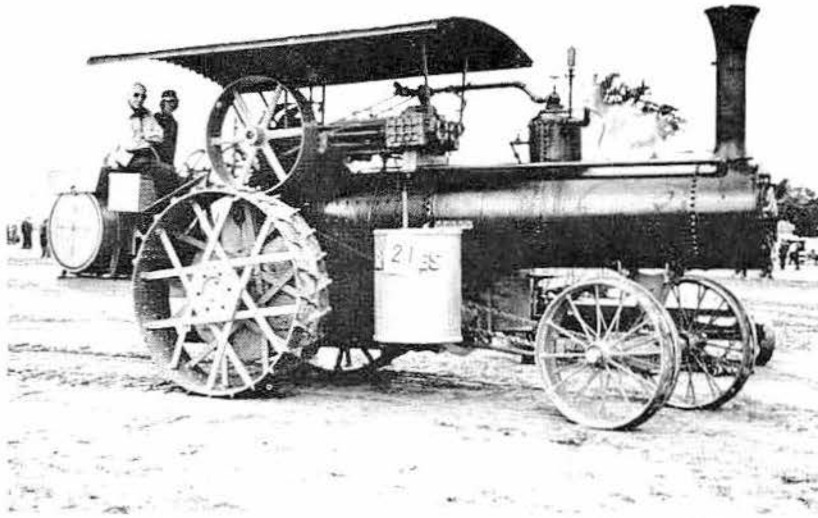
This is the cylinder side of the 16 H.P. Reeves owned by Ralph A. Weidman of Wooster, Ohio. This engine has been fitted with rubber tires so that it can be used on paved roads.

Hard at work on the belt is the 16 H.P. Reeves owned by Ralph A. Weidman. This is the typical view of an engine that a hard-working thresherman would have had in the early 1900s.

Reeves Co.

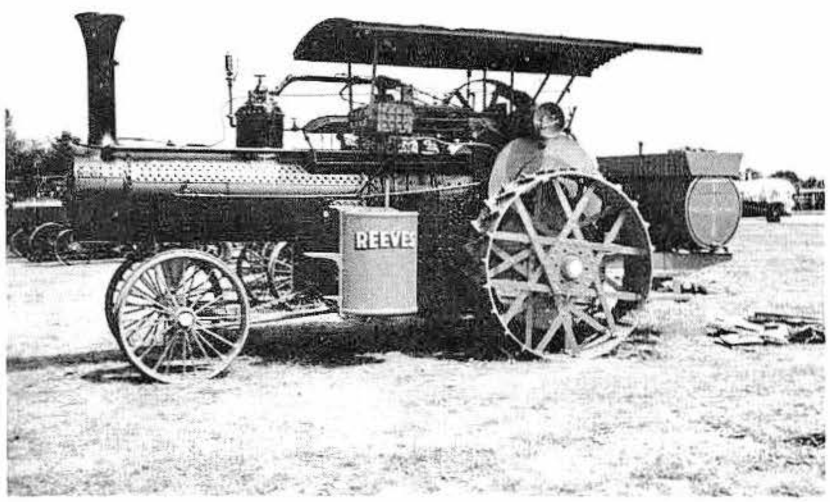


Built in 1901 was this 18 H.P. Reeves steam traction engine, cross compound. This engine's crank shaft was made of solid steel forgings. The cranks were slotted out and set close to and on the inside of heavy bearings, making it impossible for the shaft to get out of line, as was the case with side crank engines. The cross heads were of special design, to give strength and ease of adjustment in taking up wear.

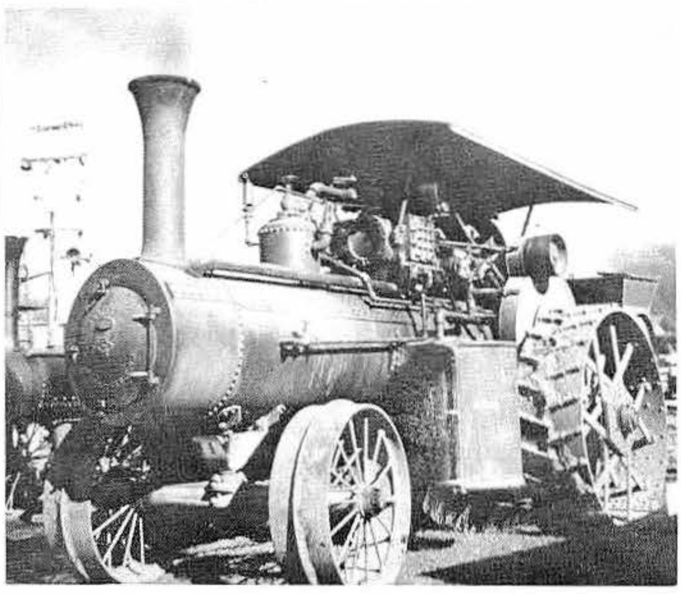


This 20 H.P. Reeves steam traction engine, built in 1918, is owned by Frank Ovens of Newtonville, Ontario. It appears at the Ontario Steam & Antique Preservers Assn. show.

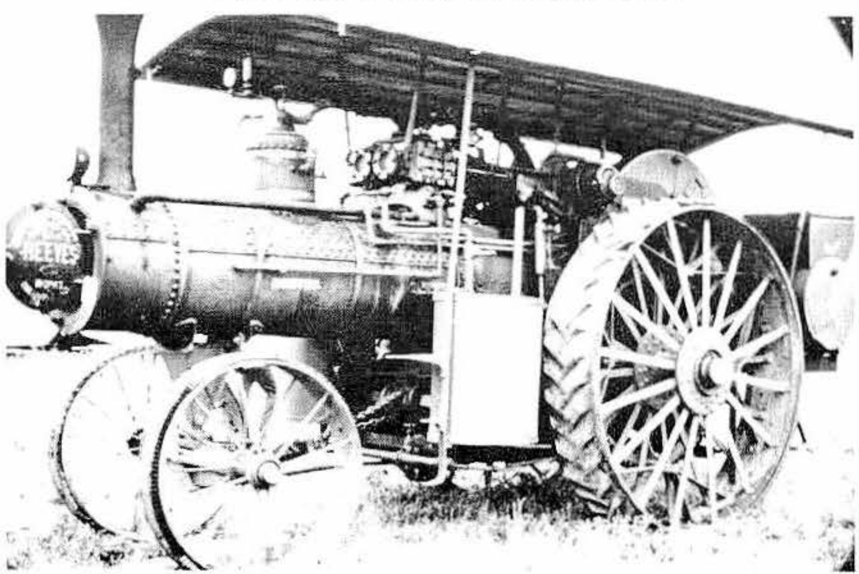
Here is the cylinder side of the 20 H.P. Reeves owned by Frank Ovens of Newtonville, Ontario. This engine has side tanks in addition to a huge rear tank, giving extensive water supply. A large water supply was very helpful in long distance hauling or in plowing very large fields.



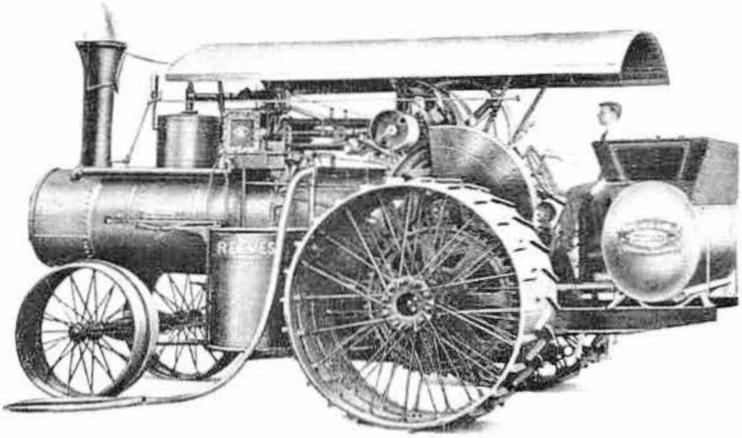
This 32 H.P. Reeves steam traction engine, built in 1912, is owned by the Midwest Old Settlers & Threshers Assn. of Mount Pleasant, Iowa. This engine is a cross compound Reeves, with the capacity to handle 12 to 16, 14-inch plows in old ground and 8 to 12 such plows in breaking new sod. It could plow 34 to 45 acres in ten hours in old ground, and 23 to 34 acres in new sod. Its top speed was two miles per hour. This 22-ton engine has 32 drawbar horsepower. The cross-compound moved to Old Threshers in 1964 from Oklahoma City, Okla. Its owner there, Amos Rixman, had brought the giant iron horse out of Canada some five years prior to that time. Spouting 120 belt H.P. from its eight barrel boiler and piston, the Reeves has storage space for 16 barrels of water and one-half ton of coal.



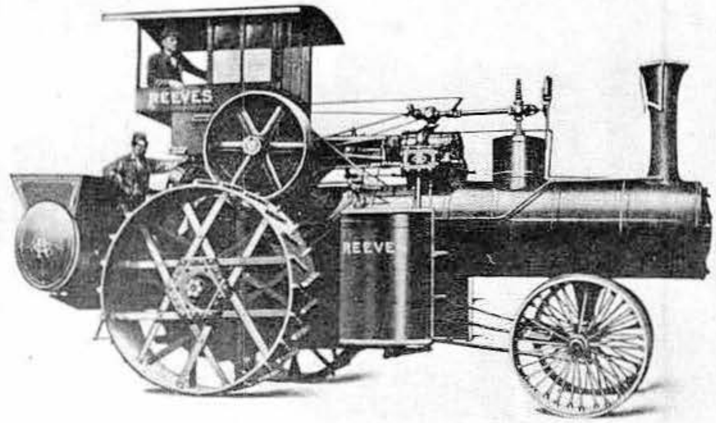
Its smokebox door open and its flues exposed for cleaning, this huge engine patiently awaits attention. It is a 16 H.P. Reeves steam traction engine built in 1916. This engine is a Canadian double cylinder, center-mount, with 8-foot driver wheels. It is a very rare engine. This engine sold for $5,000 in 1973.



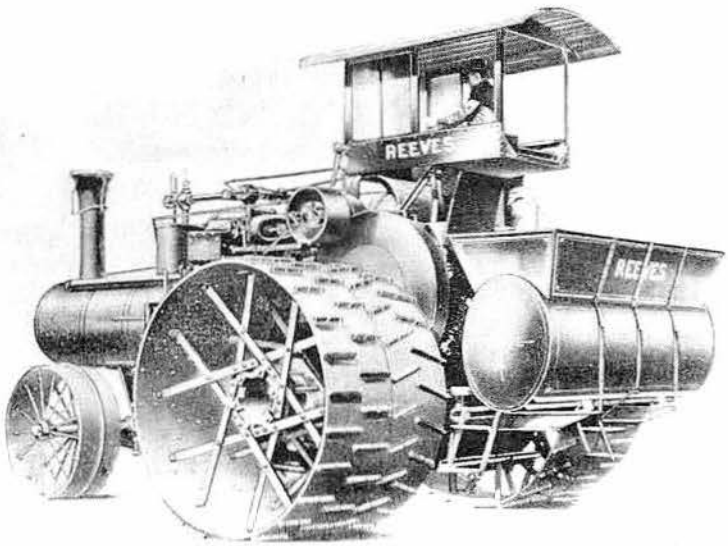
Reeves Co.



In 1913, Reeves offered this 32 H.P. cross-compound plow engine. A Reeves 32 H.P. cross-compound engine plowed 2,700 acres of old ground, an average of 50 to 70 acres per day, using 70 to 80 pounds of coal to the acre.



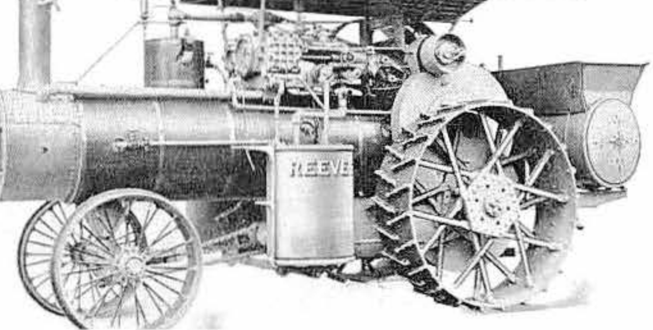
The real monster of the Reeves line was this 2-story 40 H.P. Reeves built in 1913. This engine is equipped with a special cab, water tank and fuel bunker and improved steel traction wheels. Special attention was given to this engine's boiler construction. It was built with the plates extending back from the firebox, to which the axle and countershaft bearings were attached as was the rear saddle of the engine frame. This made a most substantial foundation for these important parts. This engine's cylinder and valves were of entirely new design. Both cylinders and the valve chambers were cast solid in one piece. The valves were the piston type, perfectly balanced. The driving-axle was a solid-steel shaft, seven inches in diameter, and had extra long bearings. The countershaft was six inches in diameter, larger than the axle on many engines. All gears were cast steel and were closely encased in sheet steel housings to keep them free from dirt and grit. They practically ran in oil, which prevented cutting and reduced wear to a minimum.

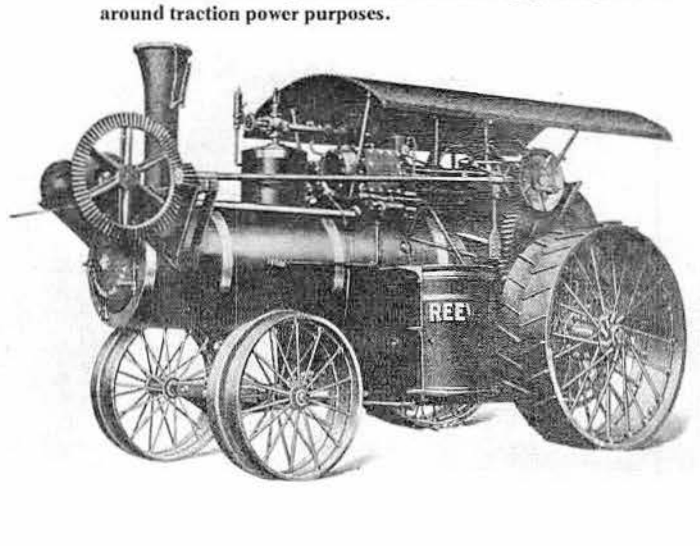


This is a rear view of the huge 40 H.P. Reeves steam traction engine, cross-compound. This was a 40 H.P. plowing engine with the driver wheels having 28-inch extension rims attached. This engine used a power steering device. It could also be guided by hand when preferred. The cab was mounted above the boiler and engine to give the operator an unobstructed view of the road and all the working parts of the engine, which were controlled from the cab. The three water tanks had a combined capacity sufficient to supply the engine for several hours. The fuel bunker on top of the platform tank would hold enough coal ordinarily to run the engine several miles on the road or several hours in plowing. This picture was taken from a 1913 Reeves & Co. catalog.

Monster of the Reeves line was this 90 H.P. cross-compound Canadian special steam engine. This picture was taken from a 1914 Reeves-Peerless-Geiser machinery catalog. This engine used a full jacket on the boiler and dome. This was considered very essential, especially for the large engines generally used in the Canadian northwest, where low temperatures were prevalent during a large part of the year. The jacket on the Reeves Canadian special engine comprised an air-space next to the boiler shelf, with close lagging of wood with an outer covering of heavy, smooth iron held in place and trimmed by brass bands. Drain pipes carried the cylinder drippings down the side and away from the jacket so there was no rust or corrosion from this source.

The geared winding drum with steel cable, was designed for Reeves engines of 20, 25 and 32 H.P. This equipment was built only to order and for attachment to the three sizes of engines noted. It included, besides the drum and gearing, 300 feet of ½-inch steel cable. It was adapted for moving houses, heavy machinery, and bulk material out of inaccessible places. It was recommended for engines intended for hauling, grading, and all around traction power purposes.





Remington Co.

D. L. Remington was born Marquis de Lafayette Remington in Hancock County, Illinois, in 1847. The family crossed the plains in 1849 with ox teams and located at Roseville Junction, California. Following the death of his father in 1858 in Placer County, Remington moved to Oregon with his mother and two brothers.

The family rented land near Beaverton and Remington engaged in farming there until about 1863. He then moved to a 125-acre farm, which he purchased, near Silverton. He operated this farm until 1870, when he located in Woodburn and engaged in blacksmithing. As the date of the founding of Woodburn is 1871, Remington was one of the first citizens and business men in the new city.

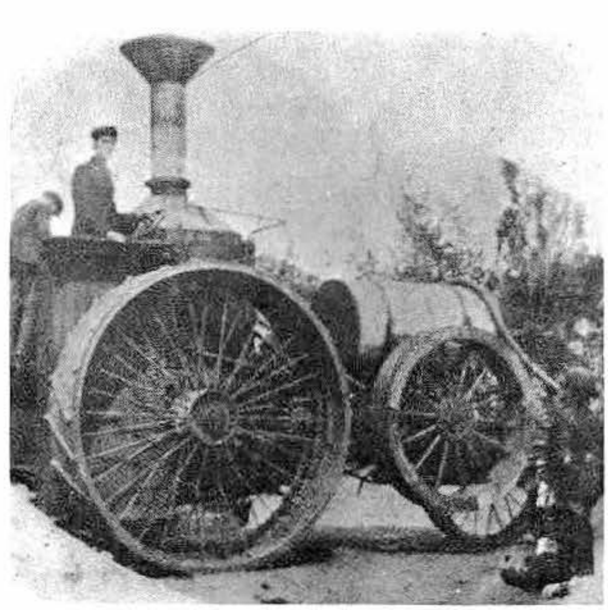
About 1882 he started a foundry and general machine shop.

Remington felt that an engine designed for traction as well as stationary power would be a welcome innovation on the farm, in the woods, in fact anywhere such power was needed. After careful study, he designed such an engine and in 1885 built his first steam traction engine. He was granted a patent for this engine on January 31, 1888.

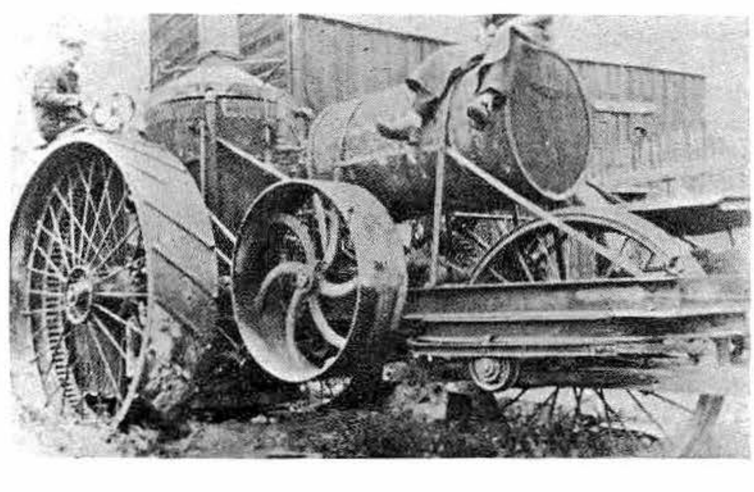
Disaster struck the Remington foundry and machine shop in 1886, when the entire works was destroyed by fire. He did not rebuild on the old site, but moved to another location nearer the junction of the Oregonian railroad with the Oregon and California road. Here he continued his manufacture of the Remington steam traction engines.

In September, 1890 he was awarded the gold medal for his steam traction engine at the California state fair. In addition to the manufacture of the steam traction engine, the company did all kinds of moulding, fitting, etc. The members of the firm were D. L. Remington and Eugene Remington.

The Remington Co., built only about five steam traction engines. Then in 1889, it made a deal with the Daniel Best Co. of San Leandro. Cal., to manufacture the engine. Best retained the original design of the engine, his refinements being mainly adding more horsepower and a bigger boiler, raising the unit higher above the ground to eliminate "high centering," and replacing the wrought iron frame with one of steel.



Built in 1893 was the primitive steam traction engine bearing the name Remington. It was a 30 H.P. machine, of tricycle design, built by the Remington Co. of Woodburn, Ore. It sported an upright boiler of rather large size, a huge combination flywheel and belt pulley, and a large front-mounted water tank. This photo, showing the machine in operation, was made about 1896, after the machine had put in three full seasons of work. Remington started operations as a foundry and general machine shop in 1882. Its founder and namesake, D.L. Remington, was granted a patent in 1888 for a steam traction engine very similar to this design.



This is believed to be a later model Remington, built around 1895. It is of the same design as the 1893 model, but has smaller and more refined flywheel-belt pulley. It too was rated at 30 H.P. Note how close the boiler is located to the ground—a design feature which must have caused more than a few problems when traveling over rough ground. In all, the Remington Co. built only about five steam traction engines. In 1889 the firm entered into an agreement with the Daniel Best Co. of San Leandro, Cal., whereby that company would manufacture the engine. Best retained the original design of the Remington, but made some significant refinements. Among these were the addition of a larger boiler, increasing the horsepower, raising the boiler higher above the ground to eliminate the hang-up problem cause by the low ground clearance, and replacing the wrought iron frame with a frame of steel.

Robert Bell

In June 1864, Robert Bell was born near the village of Hensall, Ontario. Close by was a water powered pioneer sawmill which fostered the young boy's natural liking for machinery and enabled him, while still a young lad, to build a sawmill of his own on his father's farm. Later he moved into Hensall and built a much larger sawmill and a machine shop where he did general repairs and manufactured sawmills and farm implements of his own design.

In the 1890s, steam power for threshing had proven its worth and presented a great manufacturing opportunity. Robert Bell was greatly interested and decided to try his luck in this new field. A locomotive type boiler was purchased in London, Ontario, and, enlisting the aid of John Finlayson, an experienced carpenter, they designed and made patterns for a side crank engine to mount on the boiler. The first portable engine was completed in time for the 1899 threshing season and proved a decided success. Orders came fast and a larger shop became a necessity.

A suitable plant, complete with a small foundry, was available in the nearby town of Seaforth so the move was made. The fast expanding business became established in its new location as the Robert Bell Engine and Thresher Company, Seaforth, Ontario.

Self propelled steam thrashing engines had become popular and to meet this demand Robert Bell opened negotiations with the Port Huron Engine & Thresher Company, of Port Huron, Michigan, U.S.A. He obtained permission to build their engines in Canada. The first traction engine, a 14 H.P., was built in the Seaforth plant in 1901. Altered only in minor details, these well proportioned side mounted engines with their long smoke boxes and corrugated self-cleaning drive wheels became a familiar sight in Ontario for the next 30 years.

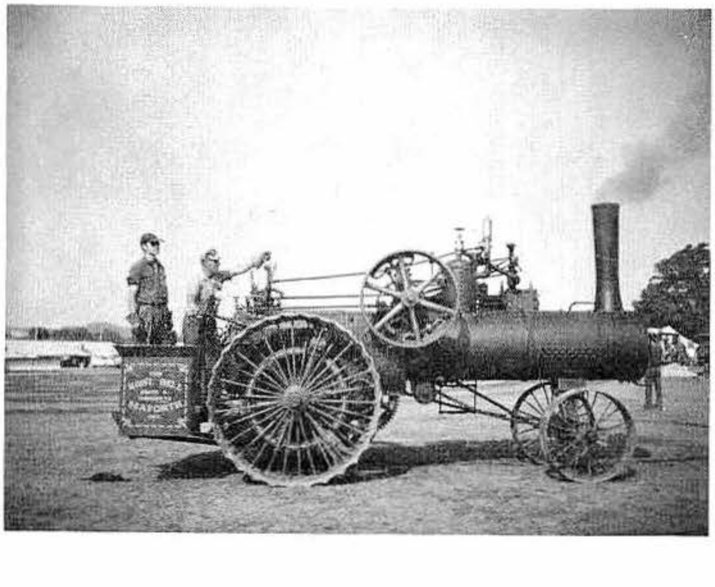
The last completely new engine was built in 1928, but engines were rebuilt and repaired for some years after. Many tandem compound engines were built in the early years but the demand switched almost entirely to simple engines in later years. The firm also made heavy round roller wheels to fit the engines and many owners purchased a set of these to enable them to use their engines to advantage before the threshing season opened.

In 1904, a branch office and warehouse was opened in Winnipeg, Manitoba, to take care of the growing Western trade and the home plant was enlarged to enable the compay to build separators.

In 1905 the company built the first "Imperial" separator which was fitted with a "Ruth" self feeder and "Farmer's Friend" wind stacker. Originally designed for the prairies, this machine proved too heavy for barn threshing and a lighter machine had to be built for the eastern trade. Still later the Imperial Junior was designed for use by the small gas tractor owner.

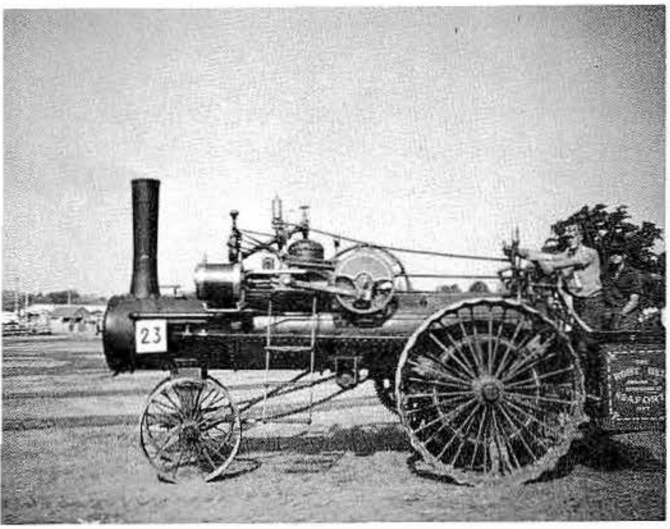
For a short while following World War I, a 15-30 "Imperial" gasoline tractor was assembled at the Bell plant, but for various reasons it was soon dropped.

Mr. Robert Bell died in 1934. His son Earl, with the assistance of John Finlayson who had stuck by his father ever since their first venture with agricultural engines, carried on the business until the sudden death of Earl Bell in 1948. An only Bell grandson, who it was hoped would carry on the business, was killed in World War II. In consequence, the plant was sold but the new owners felt that the good name of Robert Bell should remain associated with the business, and thus it carried on under the name of Robert Bell Industries. Separators and heating boilers are still made, but the once familiar and faithful old "Bell" traction engines are past and gone but not forgotten by those who spent many a happy threshing season with them.

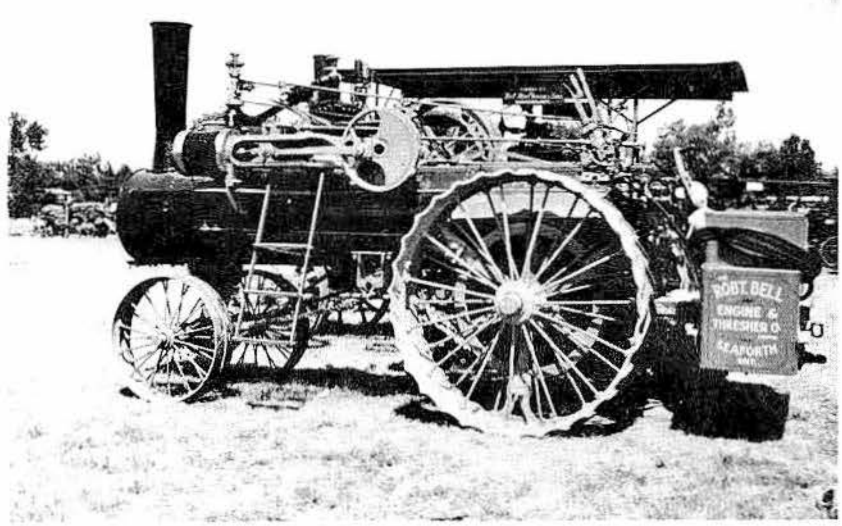


This attractive restoration is a 24 H.P. Robert Bell steam traction engine, built by Robert Bell Engine & Thresher Co. of Seaforth, Ontario, in 1922. This engine is owned by Jim Carney of Georgetown, Ontario, and is in action at the Ontario Steam & Antique Preservers show at Milton, Ontario. Robert Bell founded the Robert Bell Engine & Thresher Co.

Robert Bell

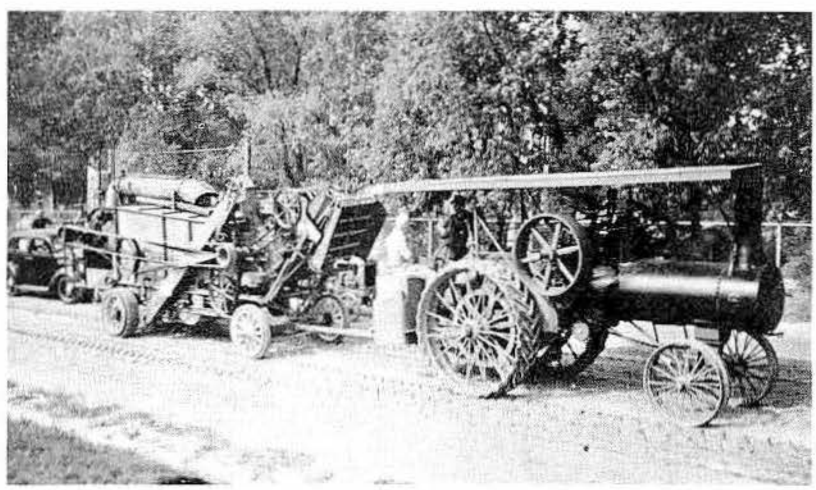


This is the cylinder side of the 24 H.P. Robert Bell engine owned by Jim Carney of Georgetown, Ontario. The first Robert Bell portable engine was completed in time for the 1899 threshing season and proved a decided success.



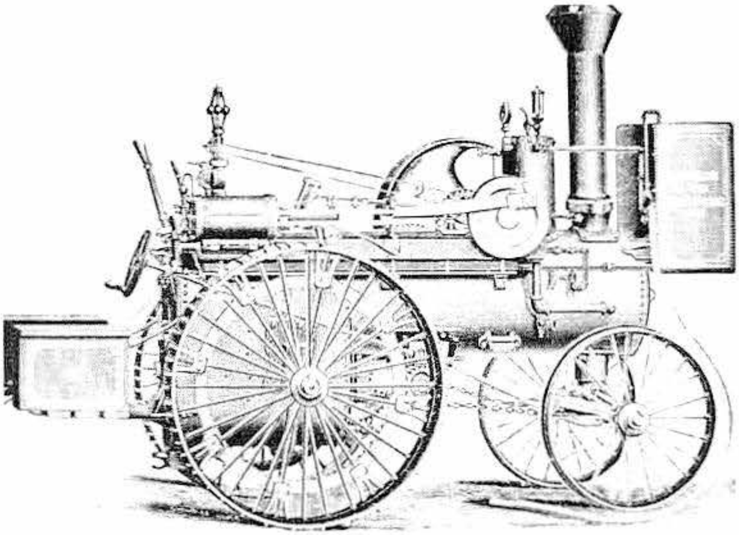
This 25 H.P. Robert Bell steam traction engine, built in 1923, is owned by Allan Byers of Alillin, Ontario. Robert Bell opened negotiations with the Port Huron Engine & Thresher Co. of Port Huron, Mich., and obtained permission to build Port Huron engines in Canada under the Robert Bell name. The first traction engine, a 14 H.P., was built in the Seaforth plant in 1901.

Seen from head-on, the 1923 Robert Bell of Alan Byers presents a nice clean and conventional appearance. In effect, the Robert Bell was simply the Port Huron engine with a different name, since Bell held the license to manufacture Port Huron engines in Canada. This was a single cylinder simple engine.



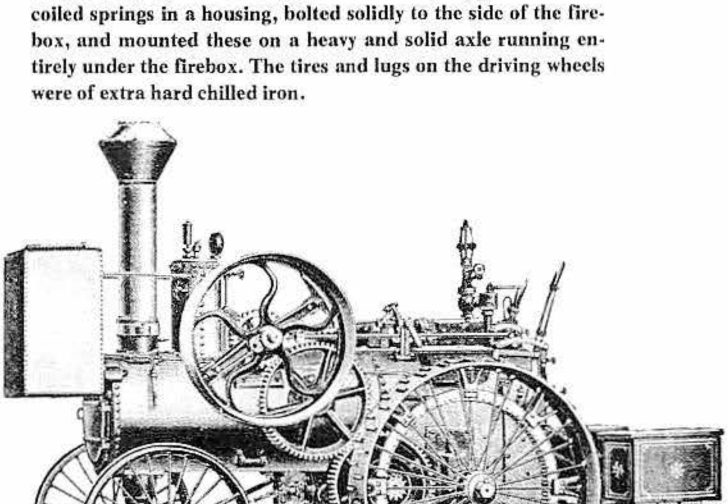
This scene appears transposed right out of the mid-1930s. Here a 25 H.P. Robert Bell steam traction engine, built in 1923, is pulling a George White thresher, built in 1921. The unit is being followed by a typical country car of the era, a black 1936 Plymouth 4-door sedan—carrying the threshing crew, perhaps. The scene took place at the Ontario Steam & Antique Preservers show at Milton, Ontario. The engine is owned by Allan Byers of Alillin, Ontario.

Robinson & Co. (Conqueror)



Sold under the name "Conqueror," was the 1895 model Robinson steam traction engine built by Robinson & Co. of Richmond, Ind. This engine came in 10, 12, 14 and 16 H.P. sizes. The cylinder was separate from the bed plate; the rings were self-adjusting, and the slides were locomotive style, made of steel, and planed on all sides. It used a patent self-oiling journal for the spur wheel on the side of the boiler, which prevented heating and cutting.

This is the flywheel side of the 1895 "Conqueror" model Robinson steam traction engine. This engine had a water tank in front, with a jet pump to fill it. The front tank, as shown here, was used on all Robinson steam traction engines that year. To this, a steam jet pump and hose was attached, with which the tank could be quickly filled from creek, tank, or well. This engine was mounted on springs. The company was the first to demonstrate that springs on a steam traction engine were practical, if properly used and applied. The company placed double coiled springs in a housing, bolted solidly to the side of the firebox, and mounted these on a heavy and solid axle running entirely under the firebox. The tires and lugs on the driving wheels were of extra hard chilled iron.



The firm, Swayne, Robinson & Co., originally was founded in Richmond, Indiana in 1842, under the name Robinson Machine Works, by Francis W. Robinson, who began manufacturing agriculture implements. The original factory is still standing, and is used as a storage house. The motive power which was used when the plant was first established was energy developed by horse-power. The motive power used in the plant at the present time is that of steam and electricity.

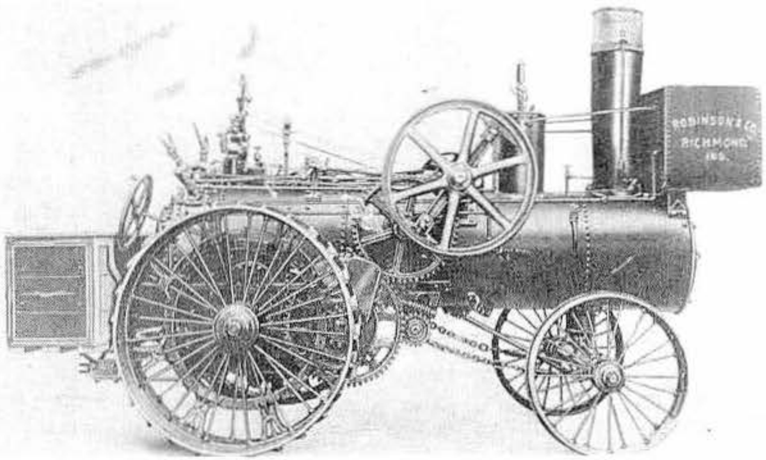
In 1872 the business was incorporated as the Robinson Machine Works. In 1877 Francis W. Robinson and his son Henry E. Robinson, became sole owners of the business which they operated under the name, Robinson & Company. The business was incorporated under that name in 1889.

During the latter part of the nineteenth century the firm manufactured steam traction engines and boilers, saw-mills, threshing machines, and a varied line of agriculture implements. Products later consisted of gray-iron castings, light and heavy agriculture equipment, and a light lathe for machinists. This product was marketed with much success. The firm's principal product at the present time is gray-iron castings, the line of agriculture implements having been discontinued several years ago. The business of the company covers the city and territory within a 250-mile radius.

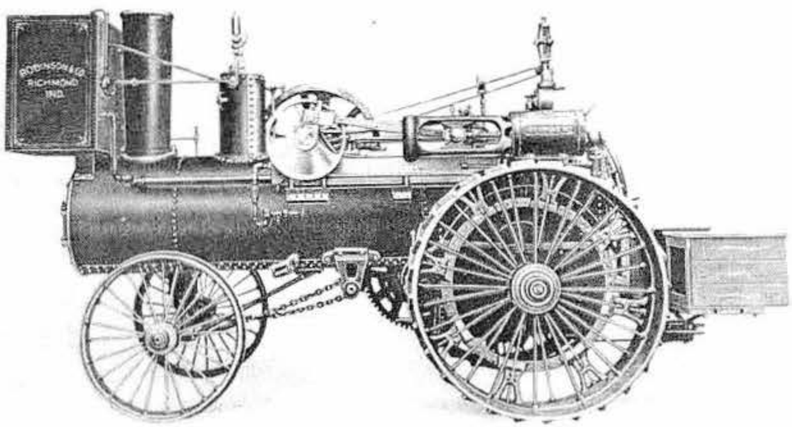
This is the oldest firm in Richmond, it having been operated continuously by the same family for 107 years. It is also one of the oldest in the state to have been operated continuously by the same family.

The Robinson steam traction engine was called the "Conqueror." It used a long connecting rod, steel slides, rear axle spring in guide chains, heavy bed plate, and patent self-oiling journal for the spur wheel on the side of the boiler, which prevented heating and cutting. It used a front water tank, friction clutch and chilled face drive wheel. A full length cab was optional. The Wolf patent valve was used with the compound steam traction engines; portable steam engines; water and fuel wagons; Bonanza thresher; saw-mills; eighteen-inch French burr portable corn and feed mill; corn and cob crusher, and Bricker's automatic single baling press.

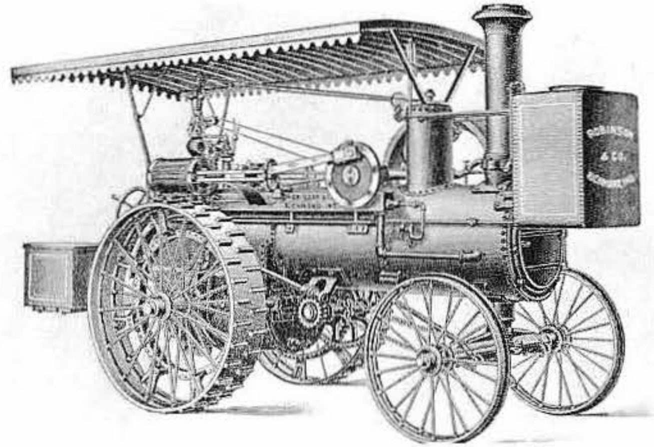
The company celebrated its 100th anniversary of operation in 1942. It is still one of the most prosperous industries in Richmond, Indiana. The present plant, including the foundry, shops and storage and shipping rooms, covers a city block. It is equipped with modern mechanical facilities. Approximately 200 persons are employed during normal production. During World War II the firm engaged principally in defense work, and employed 250 persons.



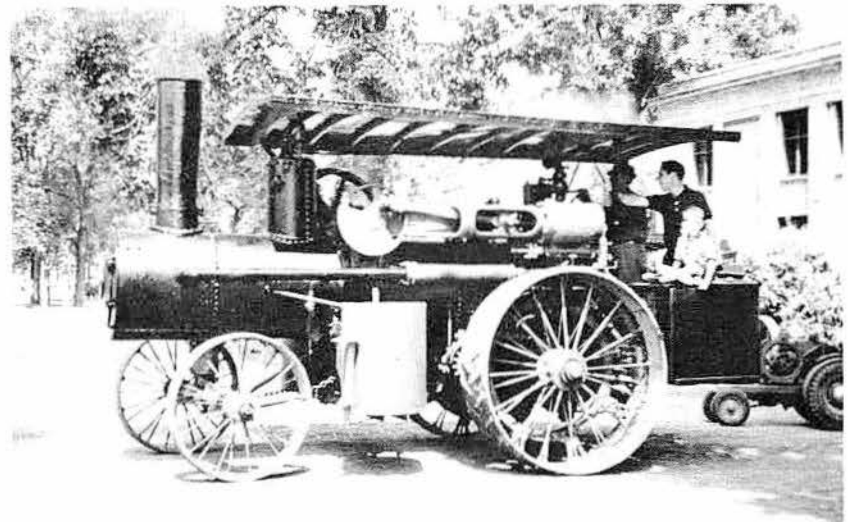
The 10 to 25 H.P. Robinson steam traction engine was equipped with front water tank, with jet pump to fill it. It had an injector in addition to a crosshead pump; and the usual trimmings such as sight feed lubricator or oil pump on the steam pipe; tallow cup on steam chest; surface blow-off; eight mud claws; clamps; oil can; wrenches; flue cleaner; poker; scraper, and combination wrench.



Marketed under the name "Corliss Conqueror," was the 14, 16 and 18 H.P. Robinson steam traction engine of 1906. This engine used a 30-inch extension smoke box and Corliss boiler. In 1872 the business was incorporated as the Robinson Machine Works. In 1877 Francis W. Robinson and his son, Henry E. Robinson, became sole owners of the business which they operated under the name, Robinson & Co. The business was incorporated under that name in 1889.

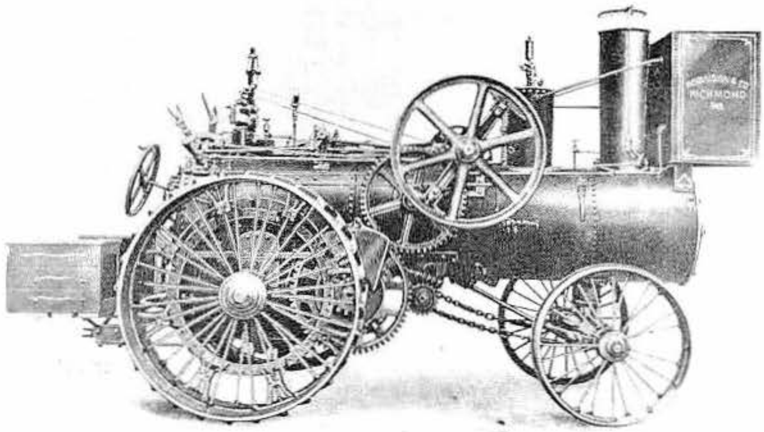


Using a long stroke engine and long connecting rod was the Robinson steam traction engine of 1900. Every Robinson steam traction engine, when completed, was fired up and put through a thorough and severe test on the road and under the belt. The full length cab, as shown, was put on all engines, when so ordered, at extra cost.

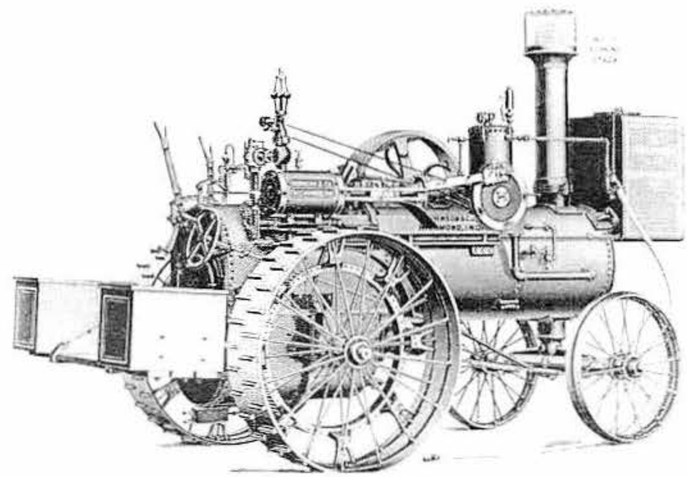


This 15 H.P. Robinson steam traction engine, built in 1910, is owned by Ken Lewis of Jackson, Mich. It appears at the Michigan Steam Engine & Threshers Club show at Hastings, Mich. The firm, Swayne, Robinson & Co., originally was founded in Richmond, Ind., in 1842, under the name, Robinson Machine Works, by Francis W. Robinson, who began manufacturing agriculture implements. The original factory is still standing, and is used as a storage house.

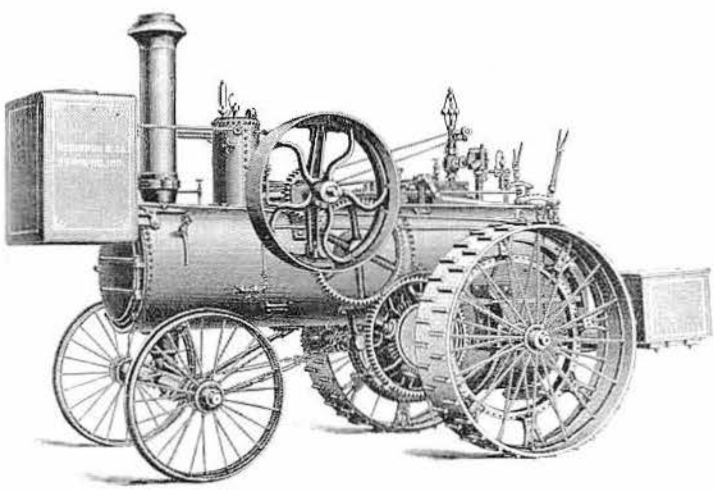
Robinson & Co. (Conqueror)



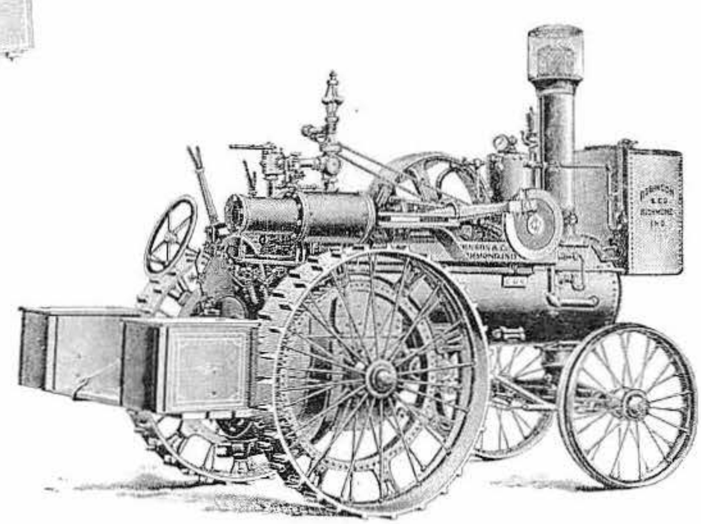
Heavy gearing is evident in this view of the 1906 model Corliss Conqueror, a 14, 16 or 18 H.P. Robinson steam traction engine. The bed plates and slides of the engines over 12 H.P. were made very heavy and attached to the boiler very substantially so there was no possibility of the engine working loose or the slides giving way.



This is the cylinder side of the 1900 Conqueror model 15 H.P. Robinson steam traction engine. Notice the long connecting rod, steel slides, solid rear axle, spring in the guide chains, and heavy bed plate. This engine has a wood burning stack.



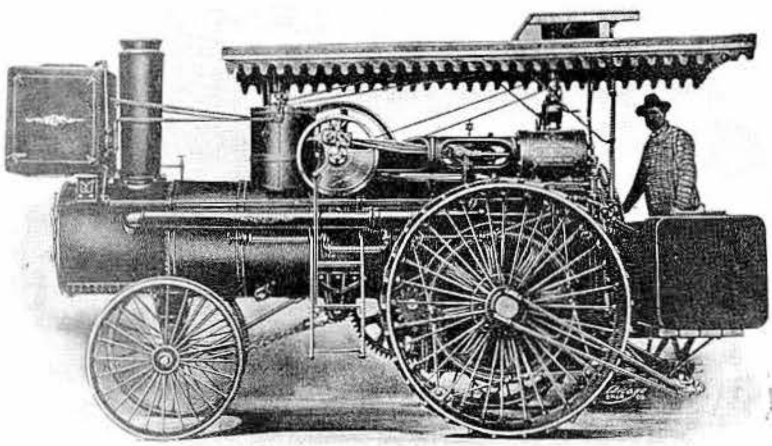
The friction clutch and chilled face drive wheel show clearly in this view of the 1900 Conqueror model 15 H.P. Robinson steam traction engine. The flues in this engine were 10 inches longer than in the past year's models. This is the flywheel side. The engine is equipped with a coal burning stack.

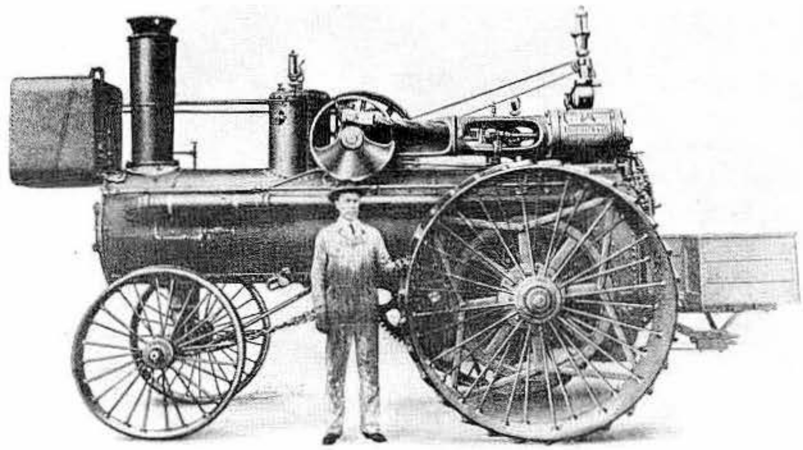


Robinson started building compounds in 1897, and by 1900 offered this 15 H.P. version. This engine has a wood-burning stack. In the Robinson, the compound engine had no more parts than in a simple engine, except for the extra compound cylinder. The Robinson engines went under the name "Conqueror," while the Robinson threshers were marketed under the name "Bonanza."

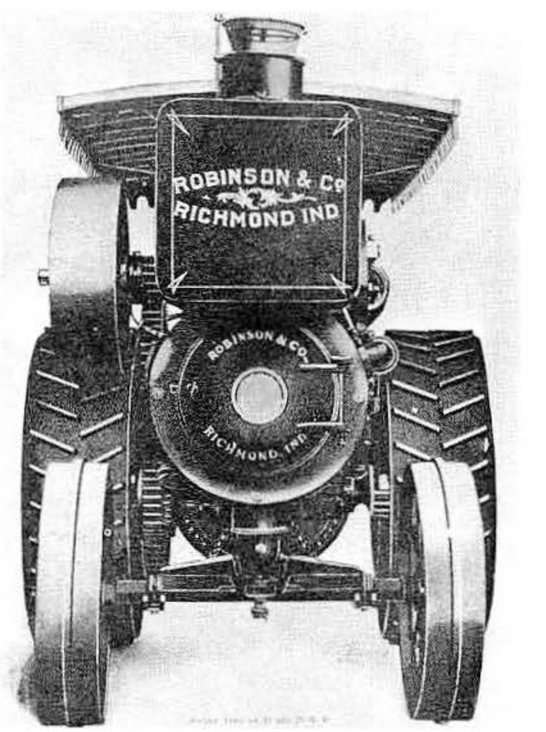
Robinson & Co. (Conqueror)

This 1907 photo shows the latest model Robinson Corliss Conqueror plowing, grading, threshing and sawmilling engine. This particular unit is fitted with a heavy-hauling or plowing hitch, braced to the rear axles. It also has extra-large water tanks and fuel bunkers on the platform, in addition to the front-mounted tank, for extended use without having to fill up. The canopy cab, with ventilator, was an accessory, as was the jacketed boiler and steam dome.

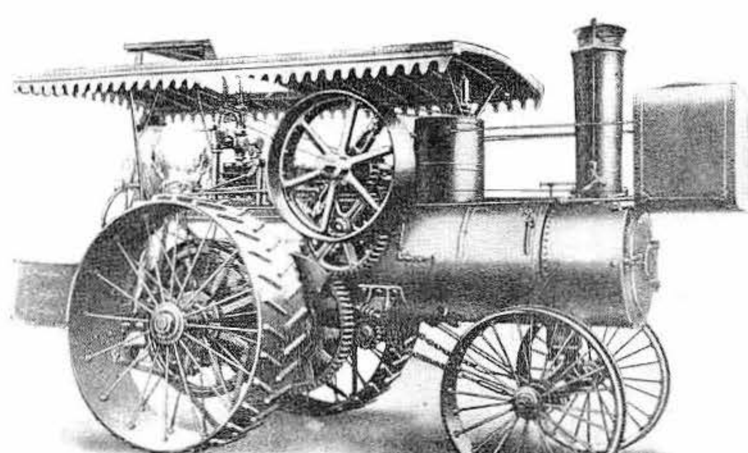




Photographed in 1906 was the 22 and 25 H.P. Robinson steam traction engine. This engine burned coal, wood or straw. These big engines were designed in size, power and strength of construction for operating the largest separators, and for plowing, grading, and railroad contractor's use. The drivers were 72 inches in diameter, with 22 or 24-inch faces and extra heavy cleats. The frontwheels were 40 inches in diameter with 8 or 10-inch faces. The faces of the gears were as follows: Idler and pocket spur wheel, 4 inches; segments, 4¼ inches; cross shaft pinions, 4¼ inches; friction gear, 5 inches. The solid axle was 3¼ inches in diameter, and the cross and main shafts 3⅜ inches in diameter.



Looking fully the part of a "Conqueror," is this front view of the 1906 model 22 and 25 H.P. Robinson steam traction engine. This engine burned coal, wood or straw.



Shown with its ventilated canopy cab was the 1906 model 22 and 25 H.P. Robinson steam traction engine. For straw burning these engines were jacketed and provided with special grates, fire brick arch and draft door in the throat sheet. To this draft door was attached an iron ash pan. For feeding the straw to the fire, an iron box with damper inside was attached to the fire door. By removing the fire brick arch and changing grates, the same engine could be used for burning wood or coal.

M. Rumely Co.

Meinard Rumely was born in Adelsburg, near Zell, Baden, Germany, in 1823. He was 25 years old when he moved to America to join his brother Jacob Rumely who was then engaged in the manufacture of pumps at Canton, Ohio, at which place he had located in 1847.

After remaining for a time at Canton, the ambitious young man proceeded to Massillon, afterwards went to Piqua, Ohio, and later on secured a position in Pittsburgh. He had learned the machinist trade and his positions were in plants where mechancis were employed.

His desire was to go further west, so he went to Chicago, but did not like it and pushed on to Milwaukee, later on going to St. Paul. He then visited Lafayette, and while there was induced to move to LaPorte, Indiana. This was in 1853, when the place was but a small town. Shortly after his arrival in LaPorte, Meinard Rumely induced his brother, John to move to LaPorte also. John had come from Germany and was working for his brother in Canton, Ohio.

The two brothers opened a machine repair shop. As the business increased the brothers took up manufacture of horsepowers and sugar cane crushers. The firm name was M & J Rumely. In 1857 the making of threshing machines was commenced and from that time on the plant grew and flourished. Its products became known in every clime where grain was harvested, and where steam engines were used.

In 1882, Meinard Rumely purchased the interest of his brother John Rumely, for a quarter of a million dollars, and became president and general manager.

The beginning of his career also marked the beginning of the manufacture of threshing machinery and hence he was a pioneer in that industry, which has become one of the largest and most important in the United States. He belongs to the same industri era which produced J. I. Case, Hiram Birdsell, Cornelius Aul man, Abram Gaar, Frederick Robinson, John Nichols, A. V Stevens, George Frick, and Edward Huber.

The large plant was operated throughout with Rumely boile generating the steam. Three hundred and fifty men were the ave age employment. The Rumely was a locomotive style boiler. Al built were return flue and straw burners for the northwest trad and the Ruth Feeder.

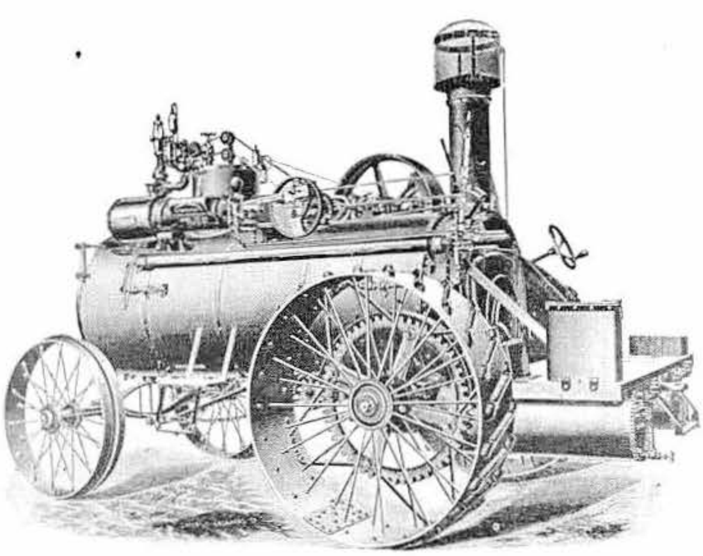
Standard equipment on the 25 H.P. Rumely single cylind rear mounted engine was a jacket on the barrel of the boiler, ge oiler, combination platform with fuel box and tool box, one sic water tank, independent steam pump, injector, steam gauge, pc valve, whistle, steam blower, glass water gauge, governor, aut matic oil pump, tallow cup, full complement of oil cups, one piec 1-inch hose, oil can, wrenches, flue cleaner poker and scraper.

Extra cost equipment included canopy top, extra water-ca rying outfit, hose crane and suction hose, headlights, extensio rims, and straw-burning attachment.

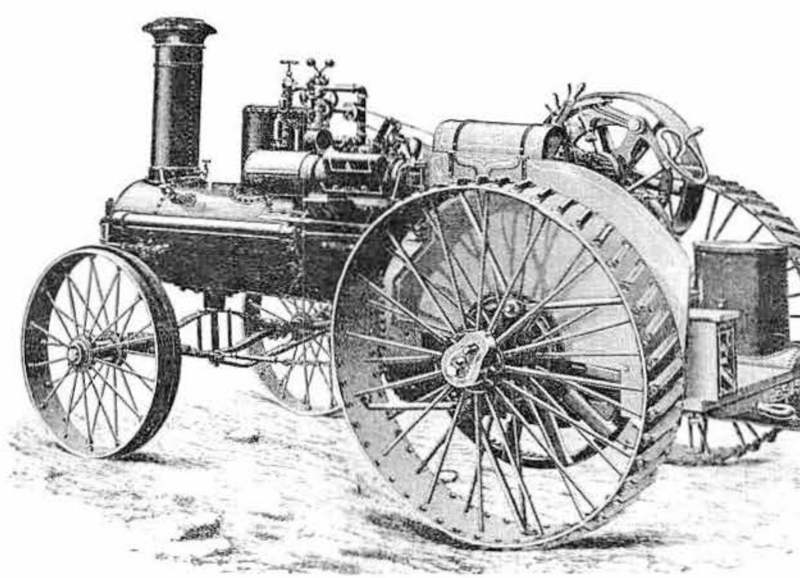
This engine's shipping weight was about 19,500 pounds, th width overall was 108 inches. The height to top of stack was 12 inches and the overall length was 228 inches.

In 1911, the M. Rumely Co., acquired the properties and bus ness of the Advance Thresher Co. that was established in 188 and the Gaar-Scott & Co., established in 1836. Then, in Noven ber 1912, the corporation acquired the Northwest Thresher Co. o Stillwater, Minnesota.

The Advance-Rumely Co. was incorporated in December 1 1915. The Allis-Chalmers Corporation on June 1, 1931, acquire most of the assets of the Advance-Rumely Corporation.

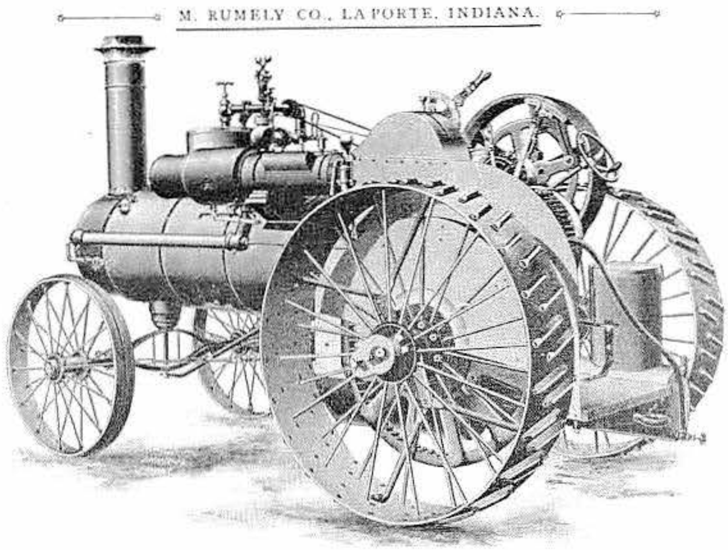


The Rumely return flue steam traction engine was pictured in the 1902 Rumely Co. catalog. The Advance-Rumely Co. was incorporated in 1915. The Allis-Chalmers Corp. acquired most of the assets of the Advance-Rumely Corp. in 1931.

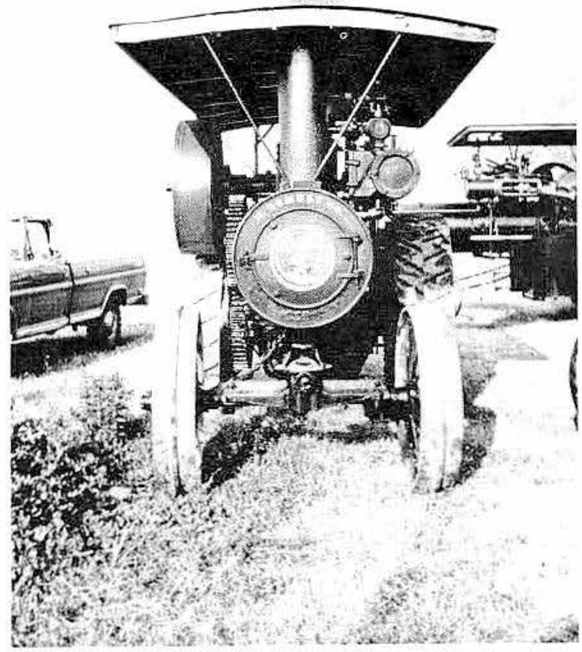


This simple cylinder 12 H.P. Rumely steam traction engine was built by M. Rumely Co. of LaPorte, Ind., in 1896. This engine was made in 8, 10, 12 or 15 H.P. sizes. This engine used the Arnold reverse with eccentric cut out. The gear wheels were heavy, and those upon which there was the greatest strain were made of steel. There were only two iron gear wheels on the engine.

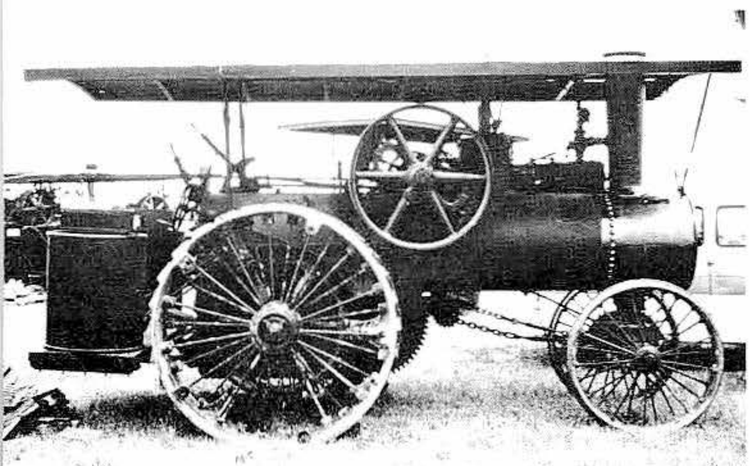
M. Rumely Co.



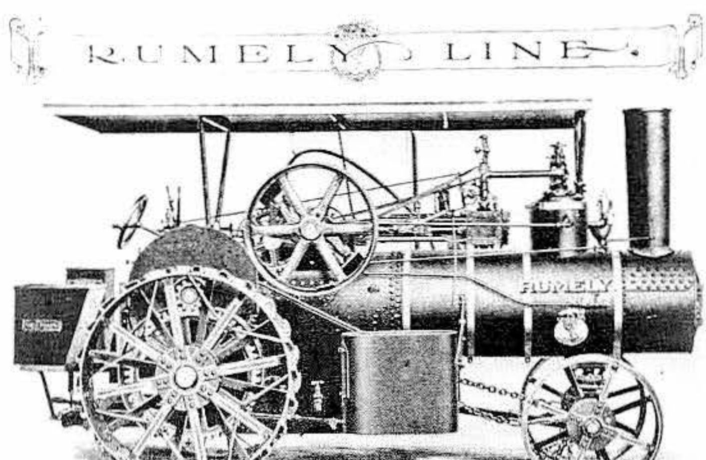
The 16 H.P. Rumely compound steam traction engine was built in 1896 by M. Rumely & Co. This engine was made in 13, 16 and 20 H.P. sizes. The engineer had within easy reach all the details, the throttle, the reverse lever, the steering wheel, whistle, pump, injector, cylinder cocks, fire door, damper, all bearings that required oiling; in fact, everything that was necessary for operating on the road. All the engines were equipped with a fusible safety plug in the crown sheet of the boiler, and there was little danger of explosions on account of low water.



Chuffing away under power at the Michigan Steam Engine & Threshers show at Mason, Mich., is the 16 H.P. Rumely owned by Ralph Woodmansee of Bedford, Mich. The full canopy is strongly braced at the rear, but appears to be quite lightly attached at the front. This is a single cylinder, simple engine.

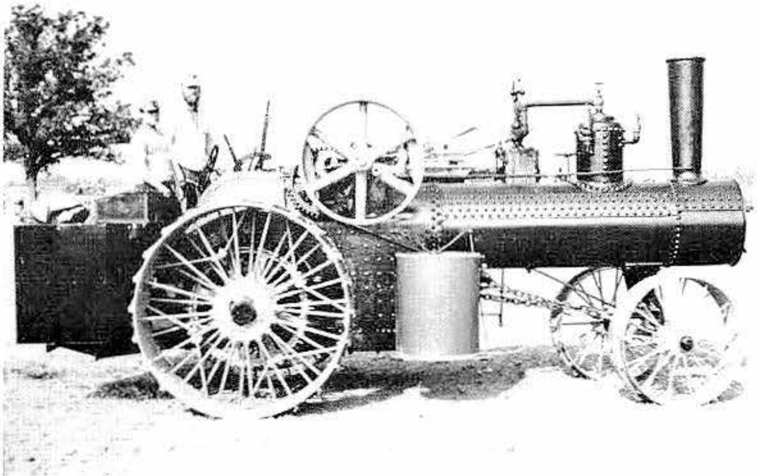


This 16 H.P. Rumely steam traction engine, built in 1913, is owned by Ralph Woodmansee of Bedford, Mich. It is equipped with two large water tanks and fuel bunkers on the platform. This engine uses the extra-cost full canopy, which extended beyond the smoke box, and had a cut-out for the smokestack.

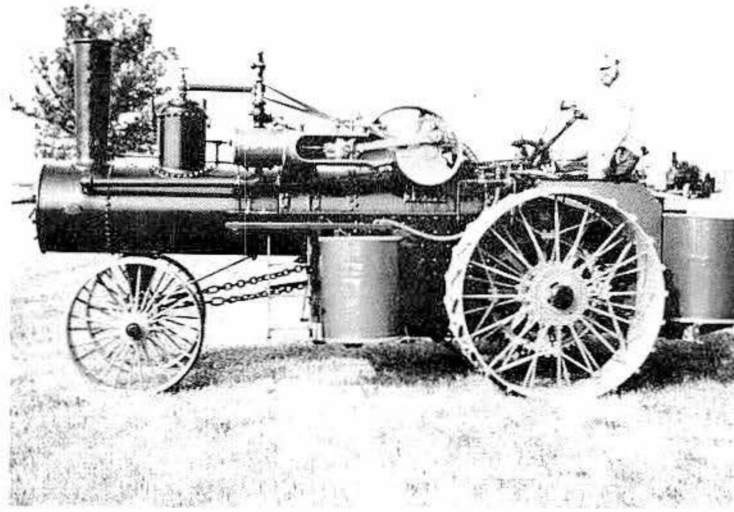


The 1914 16 H.P. Rumely steam traction engine was a sturdy looking machine. This engine is a single cylinder rear-mounted, and a particularly efficient engine for the medium-sized farm. It supplied 16 horsepower in traction and 48 horsepower on the belt. Coal, wood, or straw could be burned as fuel.

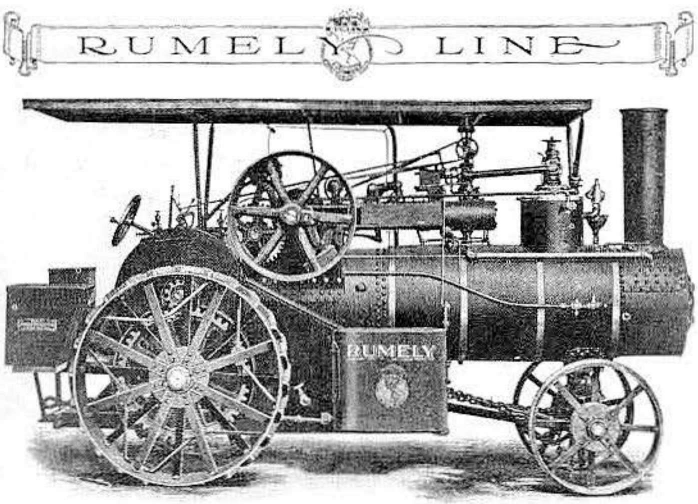
M. Rumely Co.



This 20 H.P. Rumely steam traction engine, built in 1915, is owned by Dennis Salley of Mason, Mich. It appears at the Michigan Steam Engine & Threshers show at Mason.

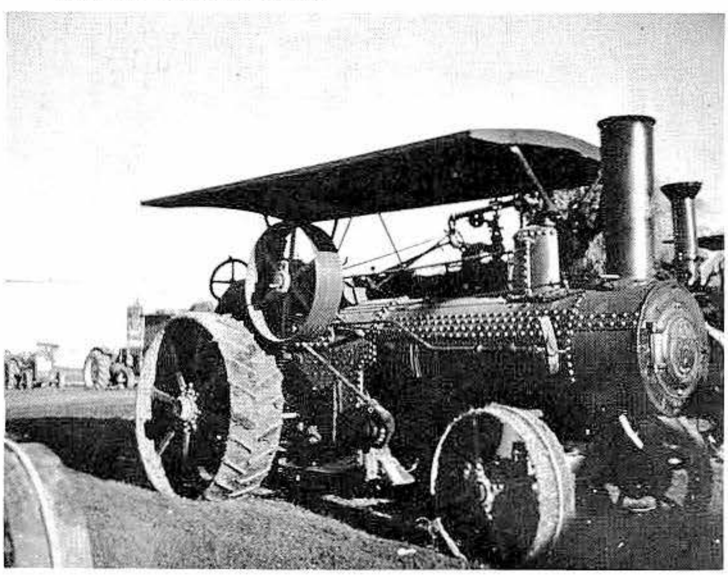


This is the cylinder side of the 20 H.P. Rumely owned by Dennis Salley, Mason, Michigan. It is equipped with both rear and side tanks.

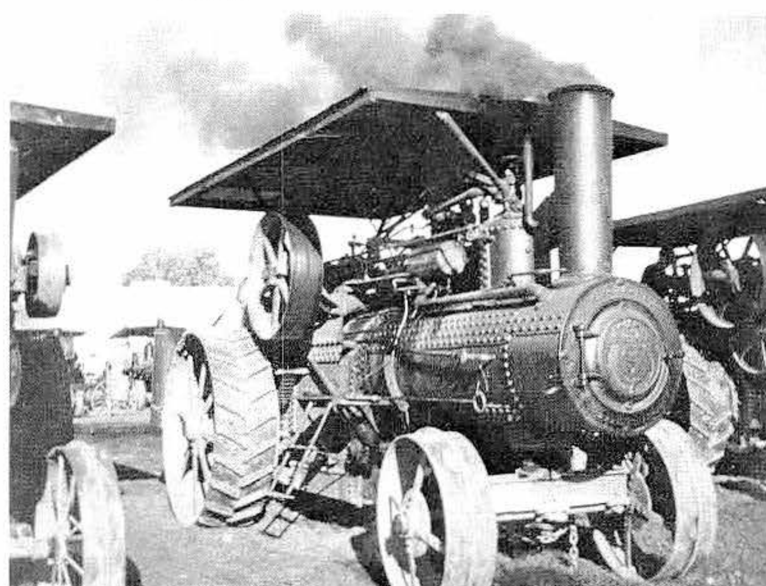


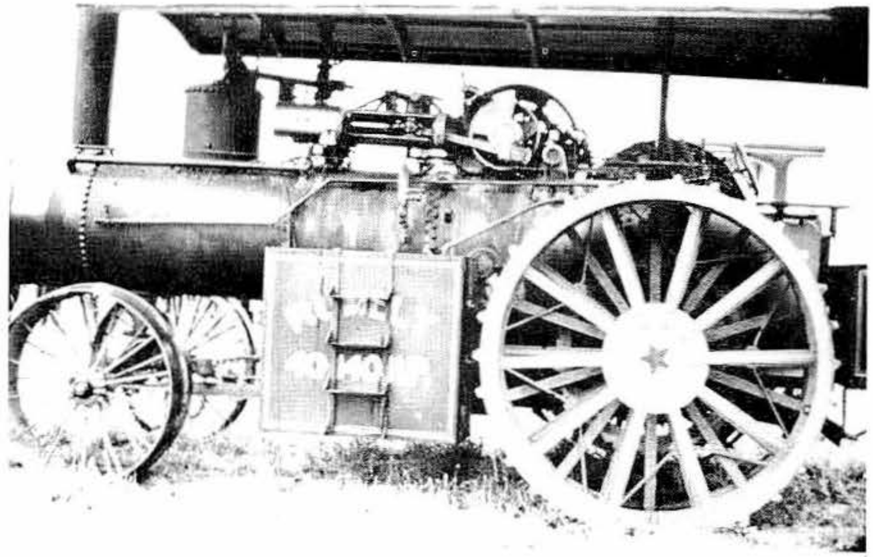
Offered in 1914 was this 16 H.P. Rumely double cylinder, rear-mounted steam traction engine. The cylinder was 66¼ inches in diameter, the stroke 10¼ inches. The flues were 78 inches in length, and 2 inches in diameter. Fifty were used in each engine. The shipping weight was 17,000 pounds.

A 20 H.P. Rumely single cylinder steam traction engine, built in 1919, is owned by Milo Mathews of Mount Union, Iowa. It is shown at rest at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa.

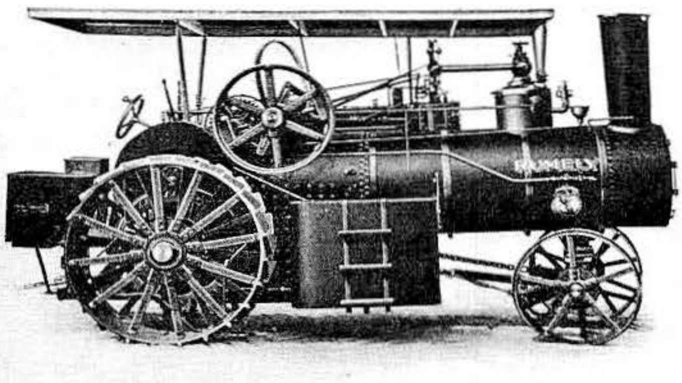


Spouting a full head of steam is this 20 H.P. Rumely double cylinder steam traction engine built in 1919. This engine is also owned by Milo Mathews of Mount Union, Iowa, and appears at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant.

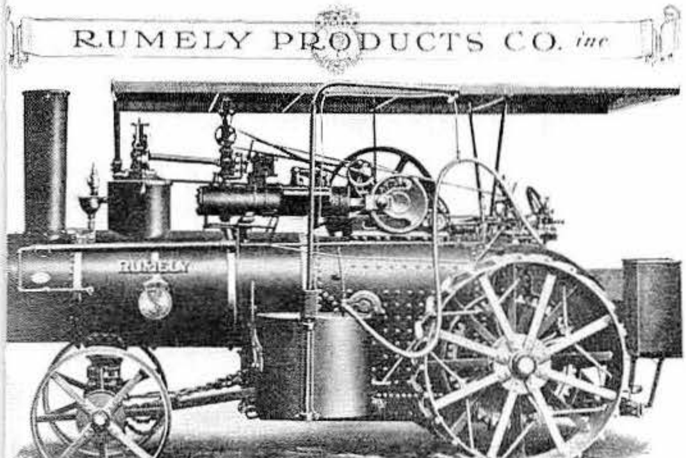




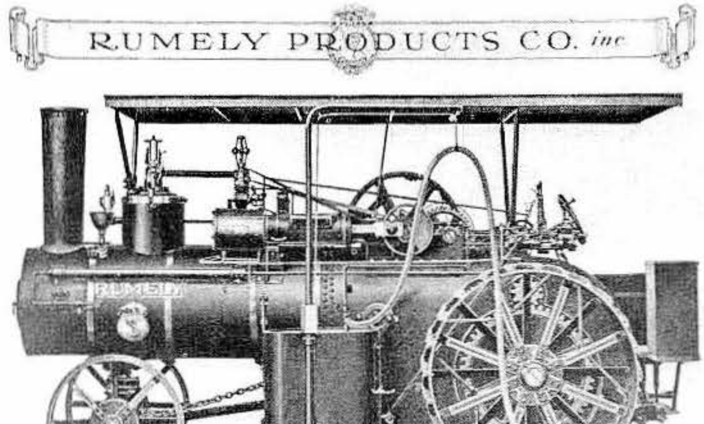
The largest Rumely was this 40-140 H.P. steam traction engine built in 1912. The engine is a double cylinder with full extension wheels. It sold for $15,700 in May, 1973.



Providing 75 H.P. on the belt and 25 H.P. on the drawbar, this 25 H.P. Rumely single cylinder, rear-mounted steam traction engine was pictured in a 1914 M. Rumely & Co. catalog. This engine was mounted on a universal high pressure Canadian type boiler. The largest separator could be easily handled, as could ten or twelve bottoms in plowing, as well as heavy or light power demands of the large farm. Extra cost equipment included a canopy top, extra water-carrying outfit, hose crane and suction hose, headlights, extension rims, and a straw-burning attachment.



Equipped with a standard boiler was this 1914 model 20 H.P. Rumely double cylinder, rear-mounted steam traction engine. This engine was equipped with the following standard equipment: Jacket on the barrel of the boiler; gear oiler; combination platform with fuel box and tool box; one side water tank; independent steam pump; injector; steam gauge; pop valve; whistle; steam blower; glass water gauge; governor; automatic oil pump; tallow cup; full complement of oil cups; 1-piece 1-inch hose; oil can; wrenches; flue cleaner; poker and scraper.



Shown taking on water through its suction hose is a 20 H.P. Rumely single cylinder rear-mounted on a universal, Canadian type, high pressure boiler. Burning either wood or coal as regularly equipped, it could be fitted with a straw burning attachment. It was adaptable to large farm needs, successfully operating grain separators up to 36-inch, and under ordinary conditions, cutting six to eight furrows in plowing. It would of course, handle the various farm demands in the way of stationary engine work.

Russell & Co.

Charles M. Russell moved to Massillon, Ohio, in 1838. In January, 1842, Charles M., Nahum S., and Clement Russell, all carpenters by trade, formed a partnership under the name of C. M. Russell & Co., with capital of $1,500. They rented an old two story frame building known as the "White Shop" because of its coat of white wash. They at first carried on a general carpenter business, building houses around town, making furniture, and at one time having in stock a full supply of household goods, even stoves. As time went on, they added the building of machines called "Knock-Outs" for threshing grain, which was the start of Massillon's largest industry.

The Russell family came from Scottish descent and grew to maturity in the rugged New England environment where their very survival was dependent upon their industry and thrift. The great grandfather of the Russell brothers was a native of Scotland. The family Bible shows that he imigrated to Middlesex County, Massachusetts, during the early part of the 18th century. Joseph Russell, a son of the great grandfather and grandfather of the Russell brothers was born in Weston, Middlesex County, Mass.

Whenever the Russell company is mentioned, most people recall they built boilers, steam engines and threshing machines. However few people living today are aware that the Russell & Company also built railroad cars and steam shovels. They began building railroad cars in 1853. The record of the output is as follows; that they built during 1853, 50 dump cars for the Pennsylvania railroad and 100 boxcars for the Ohio and Indiana railroad. In 1854, the company built 50 passenger cars for the Ohio and Central railroad; in 1855, 100 hand cars and 200 stockcars for the Pittsburg-Fort Wayne and Chicago railroad, and 50 dump cars for the Massillon Furnace, Ridgeway-Burton & Company; in 1856, 75 flatcars for the Duquesne Railway Company, 100 gondola cars for the Broad Gauge; 100 coalcars for the New York-Pennsylvania and Ohio railroad; 50 flatcars for Steubenville; : second-class or immigrant cars, and 30 dump cars for the Pitt burgh Coal and Iron Company of Corey, Pa., and one experime tal iron boxcar and two long iron trussed cars, and in 1858, : dump cars for the Volcano Furnace Co.

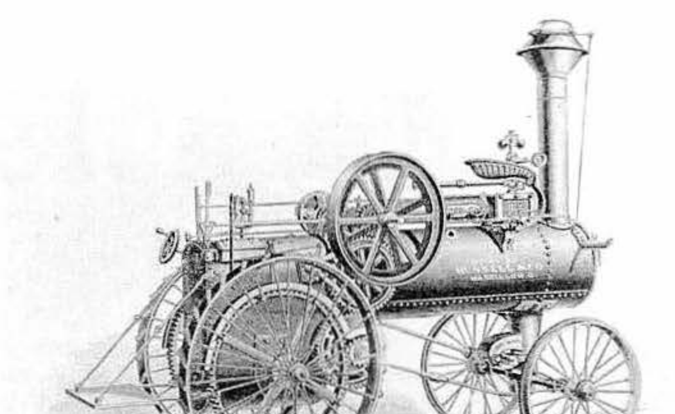
During the years that they were in the business of building ra road cars, the company manufactured upwards of 1,000 cars.

The Russell steam traction engine was built as simply as pos ble. All parts were accessible. All moving parts were in plain sig and any parts requiring adjustments were within easy reach wi ordinary tools. The very important matter of lubrication had bee thoroughly looked after. All wearing parts were ample for servi required and provided with means of adjustment. For strength c the road or under the belt it had no equal. The large driving gea gave it great leverage, the patented double ported ring-balance valve; the patented adjustable reverse and valve gear; cast irc smoke box; steel horn plates carrying the cross shaft; the be boiler made (so they said); engine bed and cylinder cast in oı piece; the platform bail that would hold the entire weight of tl engine; all these certainly put the Russell Engine in a class by self.

The Russell Co. made the following: Steam traction engines 6 to 150 H.P. with simple and compound cylinder; portable stea engines; automatic steam engines; stationary type; Russell ro roller; the New Massillon thresher; horsepowers; portable retu flue steam engines; saw-mills; four wheeled water tanks; Ne Russell thresher, and the "Boss" feeder knife grinder.

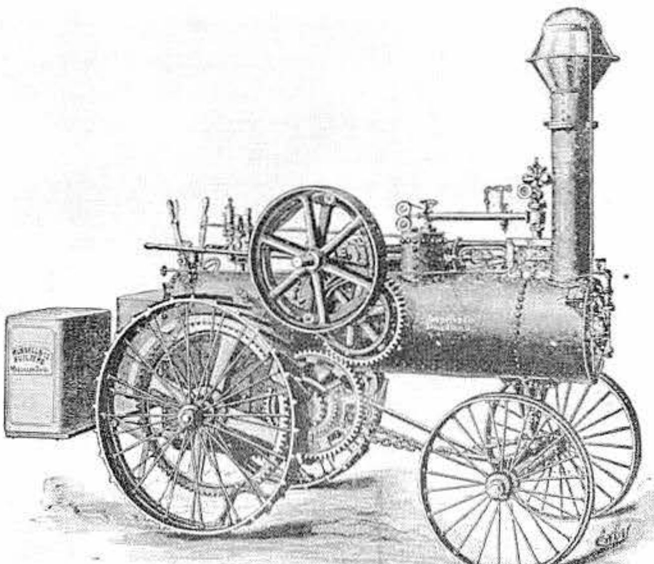
In the fall of 1878 the Russell Co, was originally incorporat under the laws of Ohio, and Nahum S. was elected president.

The Russell Co. was sold out at auction on March 2, and 1927. The service end was handled by the Russell Service Co., t 1942.

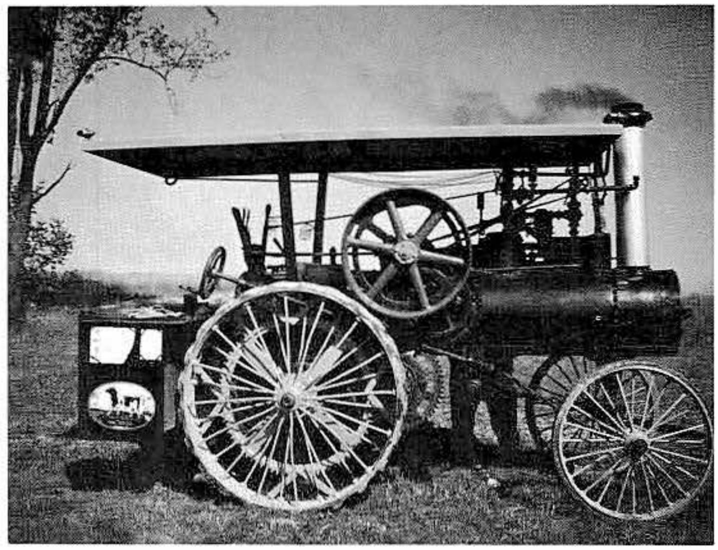


Offered in 1887 was this 6 H.P. Russell steam traction engine. This engine's piston rings were self-adjusting, and if the cylinder was properly lubricated, it would not require attention for a long period. Suitable cocks and valves were provided for thorough draining to prevent freezing in cold weather. The connecting rod was supplied with brass boxes, and had ample provision for adjustment. The cross-head was of the locomotive pattern, and, by means of a post, worked the pump rod. The slides were made extremely stiff, thus providing against springing when the engine was working. They were of cast iron, planed on three sides, and perfectly true. The valve rod and pump plunger were made of the best steel, carefully fitted and polished. The piston rod and wrist pin were of steel, forged, turned and polished. The crank plate was a polished disc, counterbalanced. It was forced upon the shaft under hydraulic pressure, and firmly keyed in place. All the main shafts were steel, and of such a size as to prevent springing. They were usually made long enough to carry an extra band wheel. The arrangement of the bed plate, as a heater, secured uniform expansion and contraction of all parts, preventing unequal strain. The cylinder was lagged, to prevent condensation.

Russell & Co.



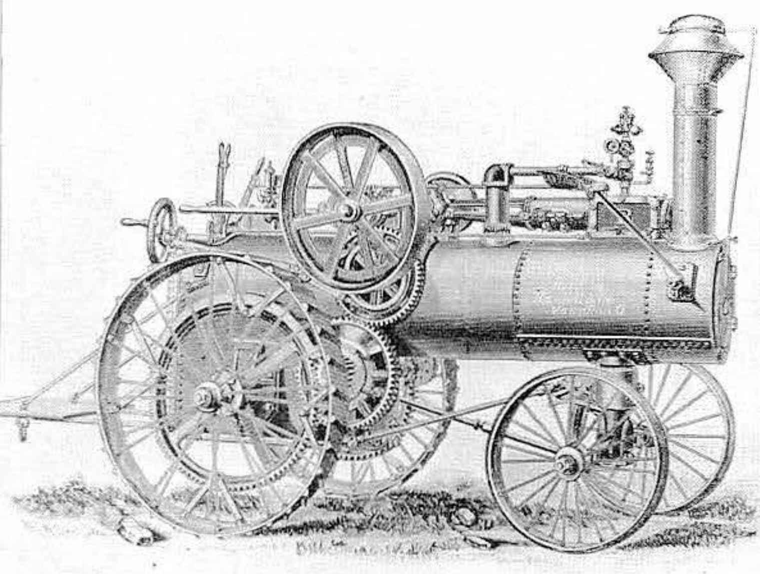
Offered in 1891 was this 6 H.P. Russell steam traction engine. These engines were all mounted with the cylinder at the smoke box end of the boiler, so that the main boxes and crank shaft were at the center of the boiler. This location of cylinder allowed short exhaust and steam pipes, both of advantage. The location of the crank shaft lessened the space to be covered in connecting the power with the ground wheel. The fly wheel was in easy reach of the engineer when on the road. All these engines used the Gidding patent equilibrium valve.



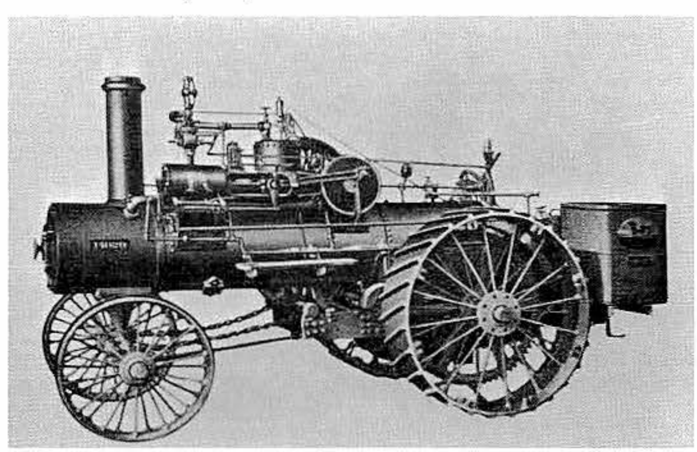
Cute as a button is this 6 H.P. Russell steam traction engine built in 1886. This engine is owned by Glenn Kroffat of Mount Perry, Ohio, and appears at the Stumptown Steam Threshers Assn. show at New Athens, Ohio. This engine was built by the Russell & Co., Massillon, Ohio.

This 6 H.P. Russell engine, built in 1906, is owned by M. B. Spencer of Burns, Tenn. It is running here at the Tennessee-Kentucky Threshermen's Assn. show at Adams, Tenn.

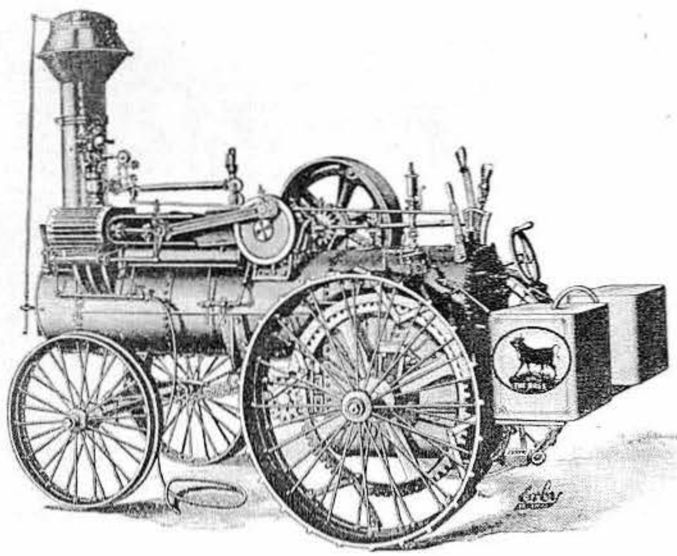
One of the earlier Russells was the 10 H.P. steam traction engine built in 1887. This engine had the following patented features: Friction clutch; reverse gear,; equilibrium valve, and improved boiler. All the engines had chain-steering.



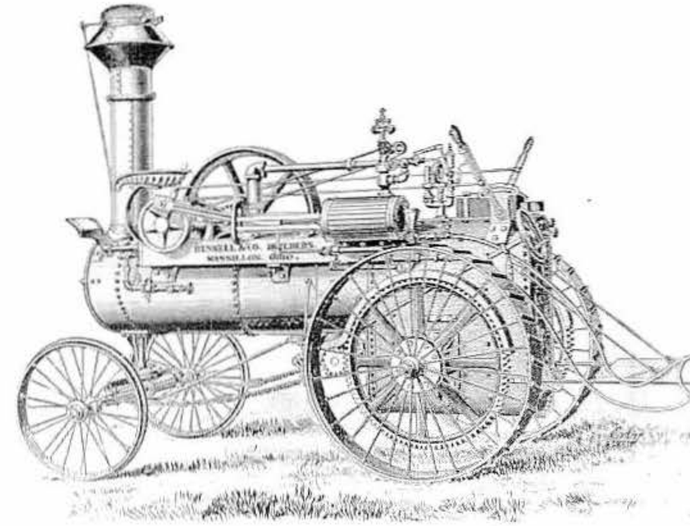
A 8 H.P. Russell steam traction engine was pictured in a 1912 Russell & Co. catalog. This was the smallest traction engine the company built in 1912. Strong for its size, light in weight and easily handled, it was used with 18-inch and 24-inch threshers. The capacity of the water tanks was 60 gallons. Its weight, without water, was 9,000 lbs.



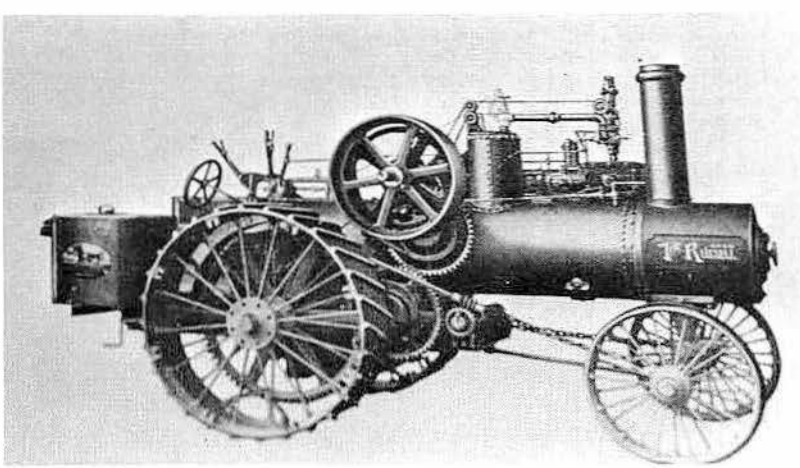
Russell & Co.



In 1891 Russell built this engine in 10, 13 and 16 H.P. versions. The throttle lever, brake lever, reverse lever, rods operating the blower, steam chest and cylinder cocks, were all within reach from the footboard, as also was a means for starting the pump or injector.



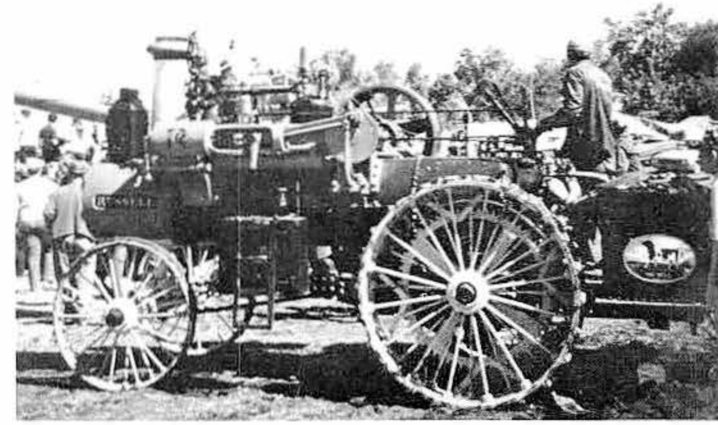
In addition to the "New" 10 H.P. engine, Russell in 1887 offered the "Old Style Improved" 10 H.P. steam traction engine. The reverse gear had the advantage of enabling the engineer to adjust his cut-off to the work in hand. It was arranged with five adjustments of cut-off for running over, and the same number for running under. With this variation of cut-off, a uniform lead was maintained. It allowed sufficient steam to be used for the work to be done, and by preventing a waste of steam, saved both fuel and water. It had all the advantages of the link, without its liability to wear. The liability to lost motion was practically overcome.



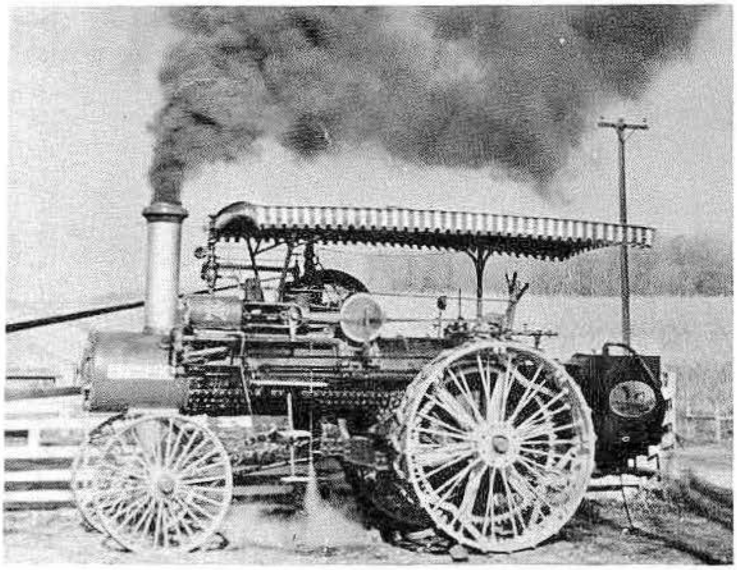
Offered in 1912 was the 12 H.P. Russell steam traction engine. This was a 7¼ x 10-inch cylinder simple engine using a standard boiler. Its speed was 2.33 miles per hour. The over-all length was 15 feet, 10 inches. The total weight was 12, 710 lbs.

This 12 H.P. Russell steam traction engine, built in 1914, is owned by the Fricke brothers of Mount Union, Iowa. It appears at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa. This engine is a 7½ x 10-inch single simple cylinder, operating at 230 RPM and at 100 to 125 pounds steam pressure.

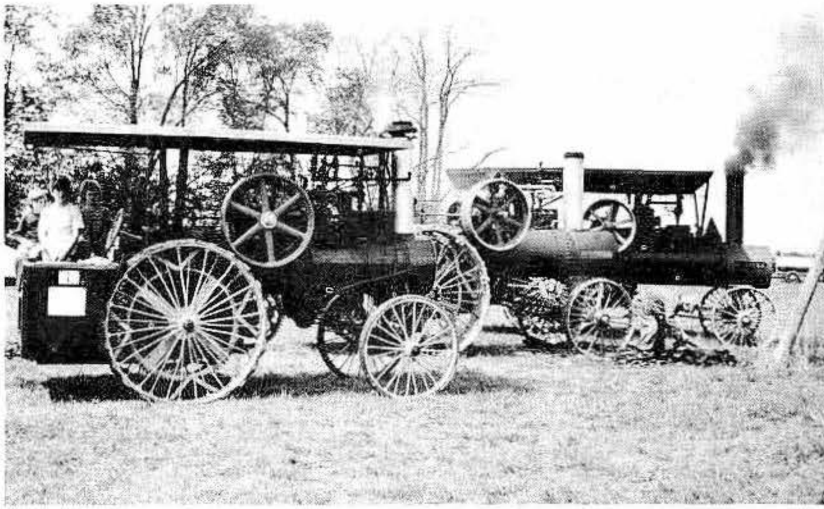
This 12 H.P. Russell steam traction engine, built in 1916, is owned by C. W. Saffell and Charles Harrison of Scio, Ohio. It is under full steam at the Stumptown Steam Threshers Assn. show at New Athens, Ohio.



Russell & Co.

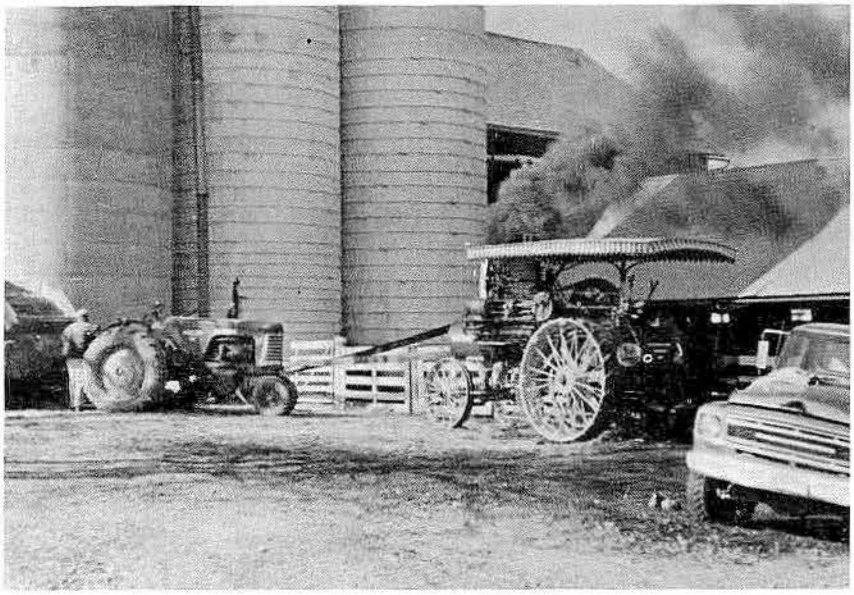


Running under full power on the belt is this 12 H.P. Russell steam traction engine, built in 1916. This engine is owned by Elmer K. Wenger of Dalton, Ohio. This picture was taken at Wenger's farm, where the engine is still in use. The engine was built in February, 1916. It is No. 16029. Its boiler was built for 150 PSI. Elmer exhibits this engine to the Tuscarawas Valley Pioneer Assn. show at Dover, Ohio.

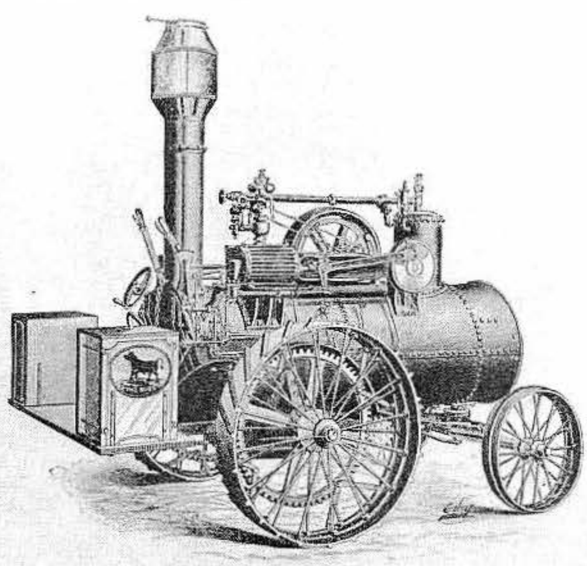


Here is a picture that is one of a kind. Three Russells all in a line. From left to right are a 6 H.P. owned by Glenn Kroffar, a 12 H.P. owned by C. W. Saffell and a 16 H.P. owned by Wm. Humphreyville. All are at the Stumptown Steam Threshers Assn. show at new Athens, Ohio.

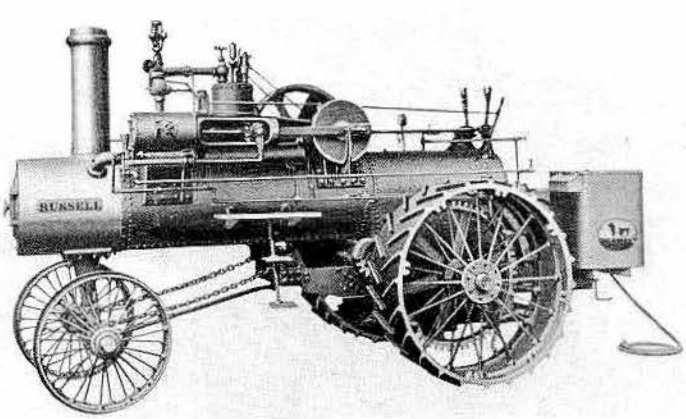
Here is another view of Elmer Wenger's 12 H.P. Russell steam traction engine, built in 1916, still at work. This picture was taken at Elmer's neighbor's farm in Dalton, Ohio, where the engine was being used to fill the silo. They use the steam traction engine every year to do this work.



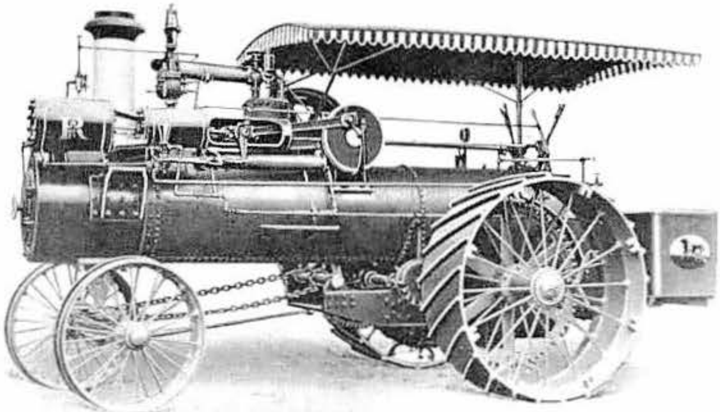
Appearing in 1891 was this unusual 13 H.P. Russell straw burner, return flue steam traction engine. This engine used a 7¾ x 10-inch simple cylinder. The boiler was of the cylindrical type, with a single main flue and small return flues. The shell was extended to form the breeching. On this was carried the stack with its special spark catcher with a hinged lid. The main flue of the boiler served as both fire-box and combustion chamber. Its length allowed the burning of long wood, when such was available. Though primarily a straw burner, this boiler was found very advantageous for wood or coal, and hence Russell supplied with every straw burner a set of grates for use with coal or wood.



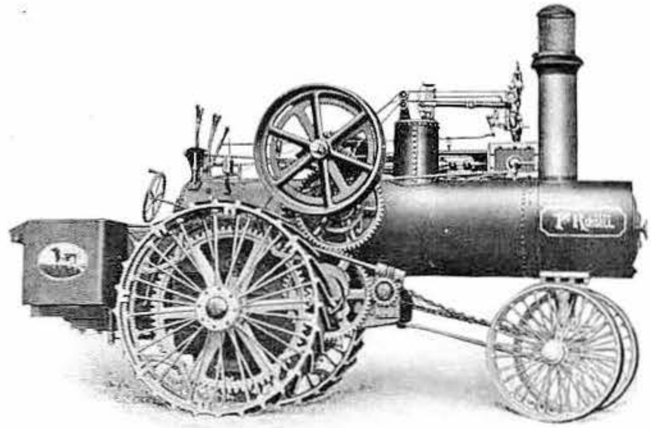
A 12 H.P. Russell steam traction engine was pictured in a 1921 Russell Co. catalog. This engine is a 7½ x 10-inch simple traction engine using a standard boiler. Russell used the cross-head pump, finding it altogether more reliable for traction and farm engines. This engine's weight, without water, was 15,300 lbs.



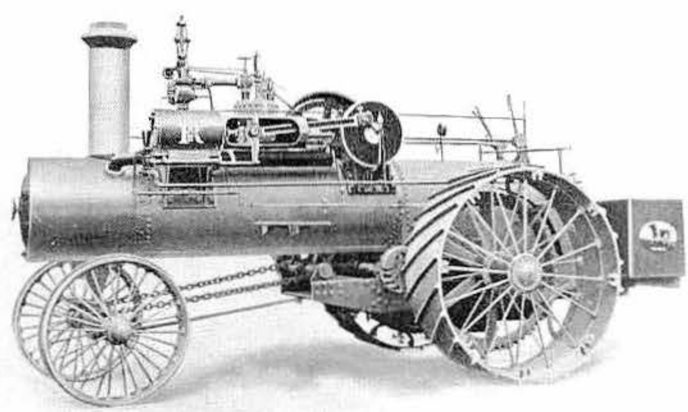
Russell & Co.



Of very appealing line was the 1907 model 14 H.P. Russell compound steam traction engine. This engine was jacketed and had a engineer's canopy. It burned coal or wood for fuel. The boiler was government tested to 225 pounds. Specially prepared gauges, safety valves and trimmings made these as safe an engine and boiler as could be made.

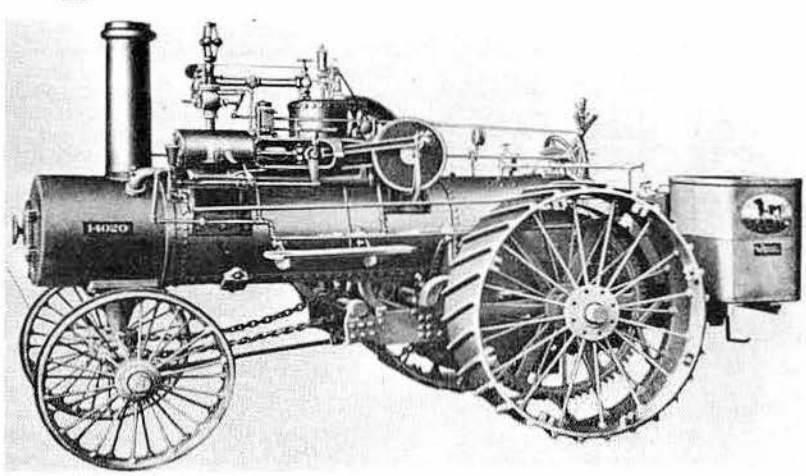


This 1907 Russell is a simple single cylinder engine. It was built with the following cylinder sizes: 6 x 8; 7½ x 10; 8 x 10; 8¼ x 12; 9 x 13; and 10 x 13-inch. Whenever the Russell Co. is mentioned, most people recall they built boilders, steam engines and threshing machines. However few people living today are aware that the Russell & Co. also built railroad cars and steam shovels.

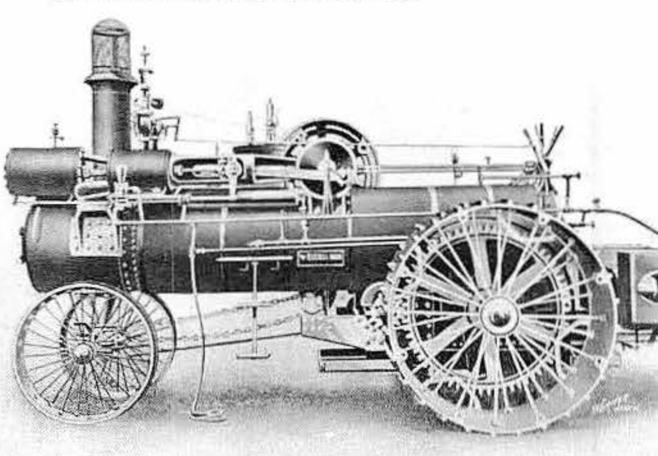


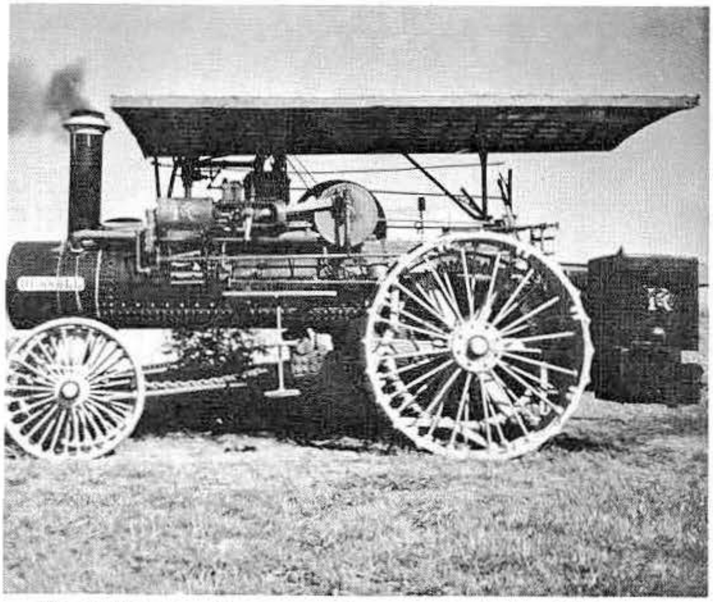
Seen from the cylinder side, this is a 1907 Russell steam traction engine. During the years that the Russell Co. made railroad cars, it manufactured upwards of 1,000 cars.

Built in 1912 was this 15 H.P. Russell steam traction engine. It used the 8 x 10-inch cylinder simple engine. The over-all length of this engine was 16 feet, 3 inches. The capacity of the water tanks was 125 gallons. The weight, without water, was 16,450 lbs.

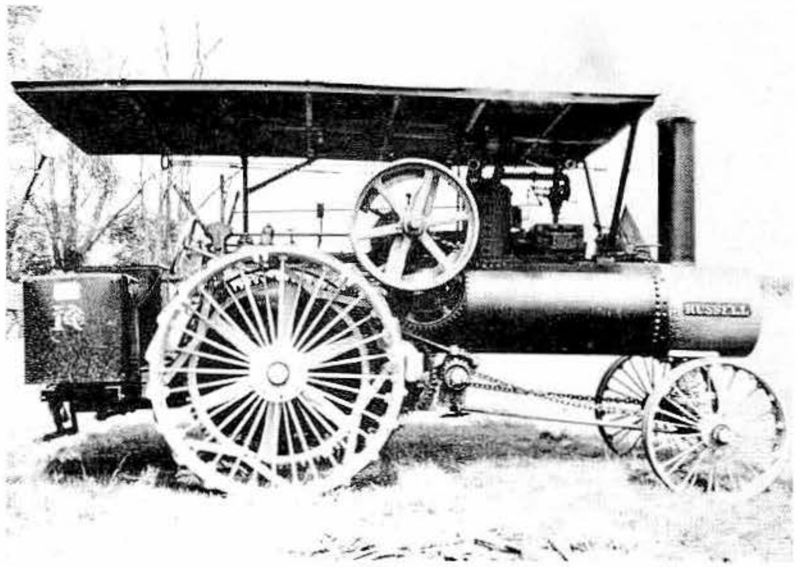


This is the 1907 version of the 16 H.P. Russell compound steam traction engine. This engine used 6½ x 10 x 10-inch cylinders. The connecting rod had babbitt-lined brass boxes at the crank end, with brass at the cross-head end, which gave ample provision for adjustment and lubrication.

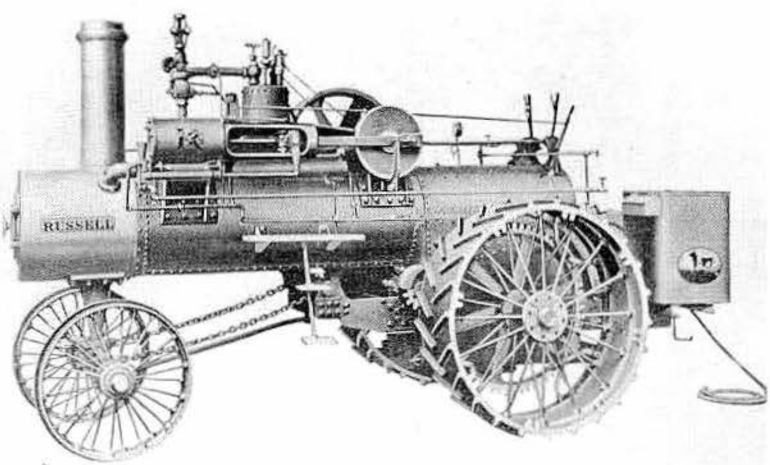




This 16 H.P. Russell steam traction engine, built in 1920, is owned by Raymond Laizure of Cadiz, Ohio. It is in action at the Stumptown Steam Threshers Assn. show at New Athens, Ohio. This is a single cylinder engine.

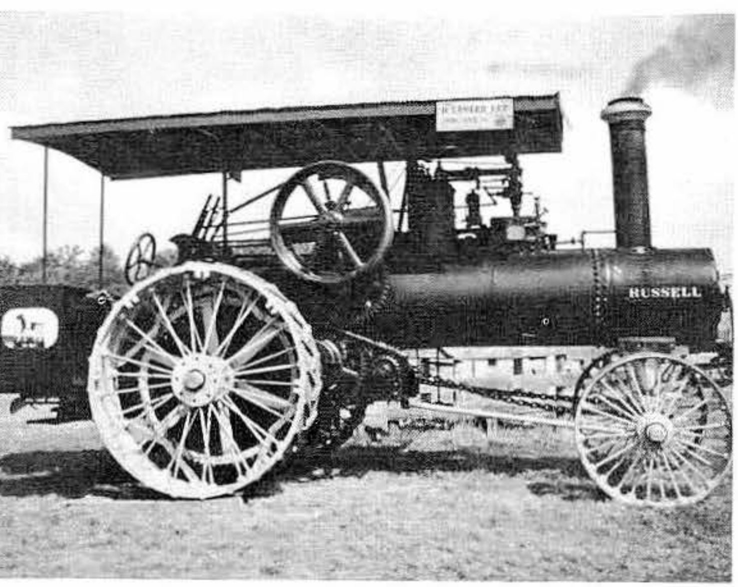


This 16 H.P. Russell steam traction engine, built in 1921, is owned by Wm. Humphreyville of Mount Pleasant, Ohio. It is at the Stumptown Steam Threshers Assn. show at New Athens, Ohio. The canopy cabs on these engines were considered accessories.

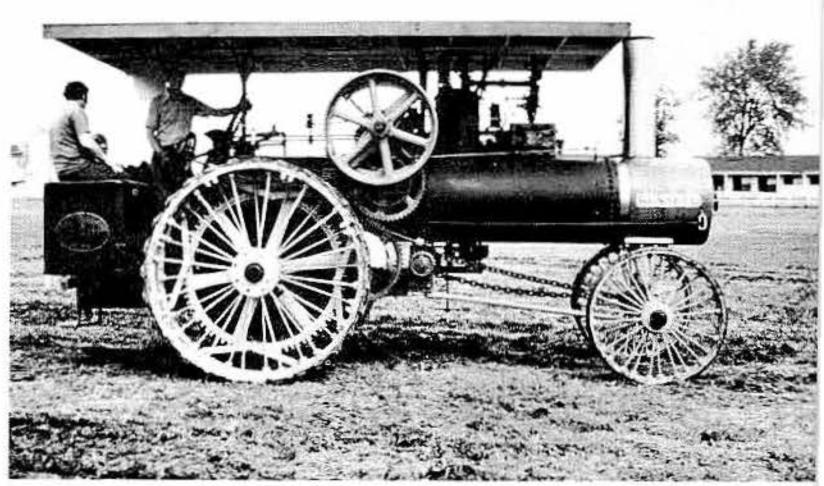


Built in 1921 was this 16 H.P. Russell steam traction engine. This engine has a 8 x 10-inch simple cylinder, and a standard boiler. The over-all length was 18 feet and the shipping weight, without water, was 17,350 lbs.

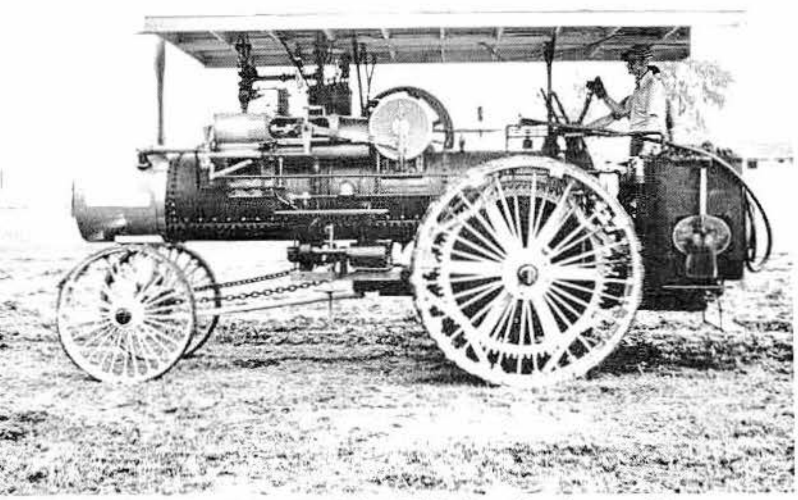
This engine is owned by H. Lester Lee of Cross Creek, Pa. It is a 16 H.P. Russell steam traction engine built in 1922. It is steaming here at the Tri-State Historical Steam Engine Assn. show at Hookstown, Pa.



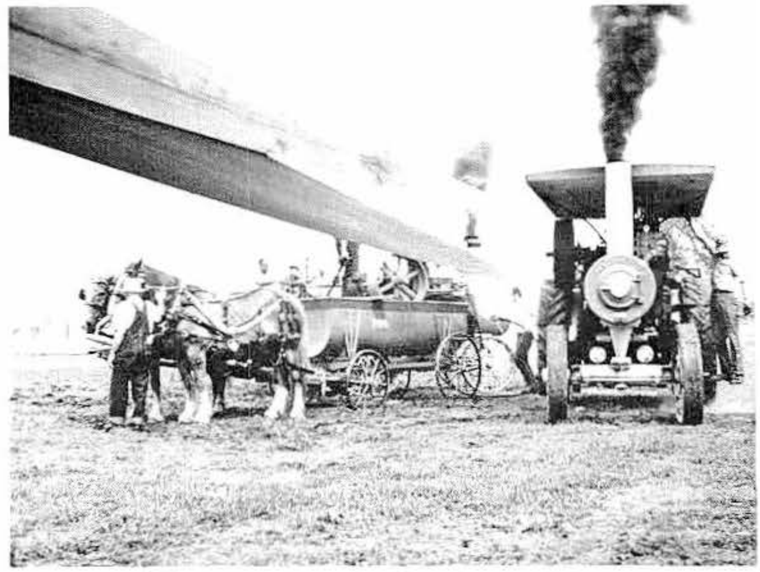
This 16 H.P. Russell steam traction engine, built in 1923, is owned by Carl Weidman of Orrville, Ohio. It is underway at the Tuscarawas Valley Pioneer Power Assn. show at Dover, Ohio.



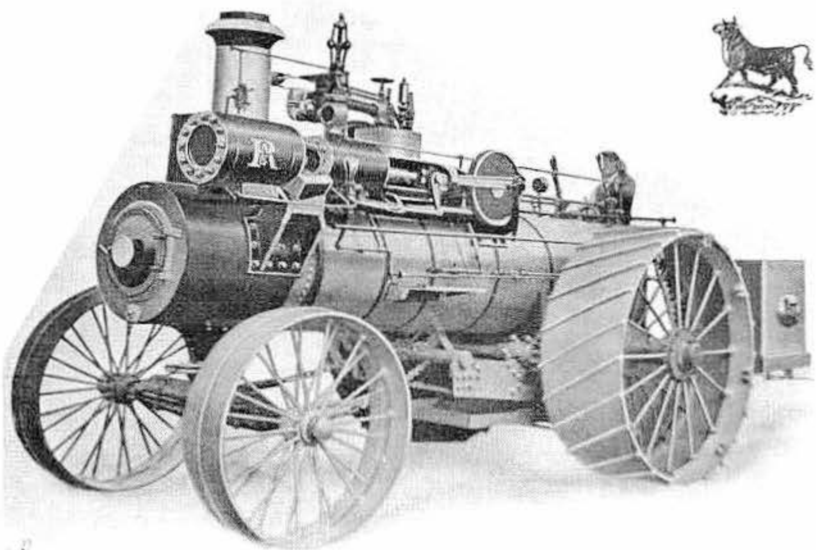
Russell & Co.



This is the cylinder side of the 16 H.P. Russell engine owned by Carl Weidman of Orrville, Ohio.

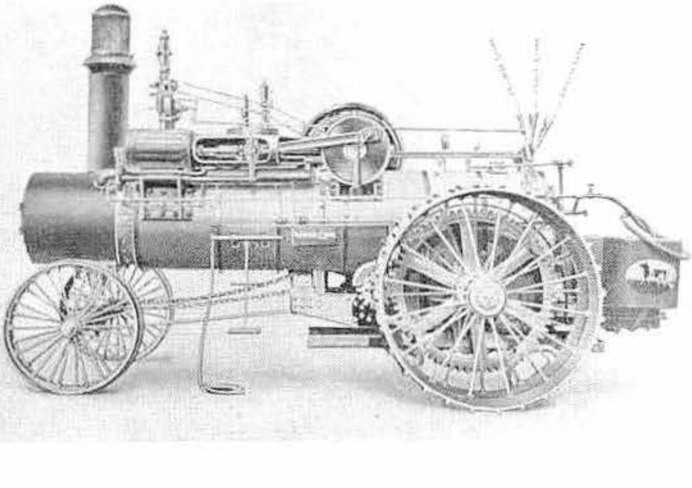


Taking on water while hard at work on the belt is the 16 H.P. Russell engine owned by Carl Weidman of Orrville, Ohio. This scene is at the Tuscarawas Valley Pioneer Power Assn. show at Dover, Ohio. The belt is running the power eater to test the engine. The team of Belgians are owned by Doran Widder of Sugarcreek, Ohio.

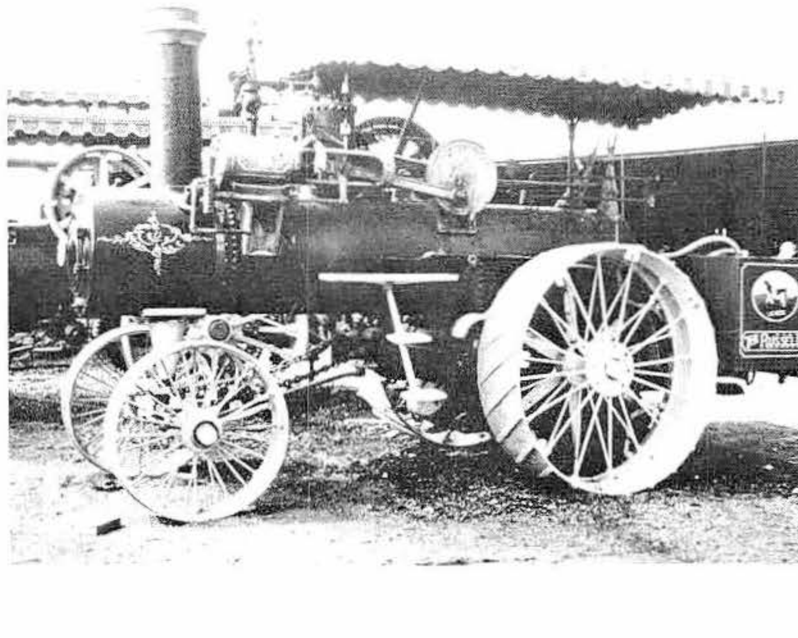


A heavy looking hauler was the 17 H.P. Russell compound steam traction engine of 1907. Headlights for this engine were at an extra cost of $8.50 each. The engineer's canopies and cabs were extra and furnished only on order. The canopy, 6 feet wide by 12 feet long, cost $50, and the locomotive style cab cost $100.

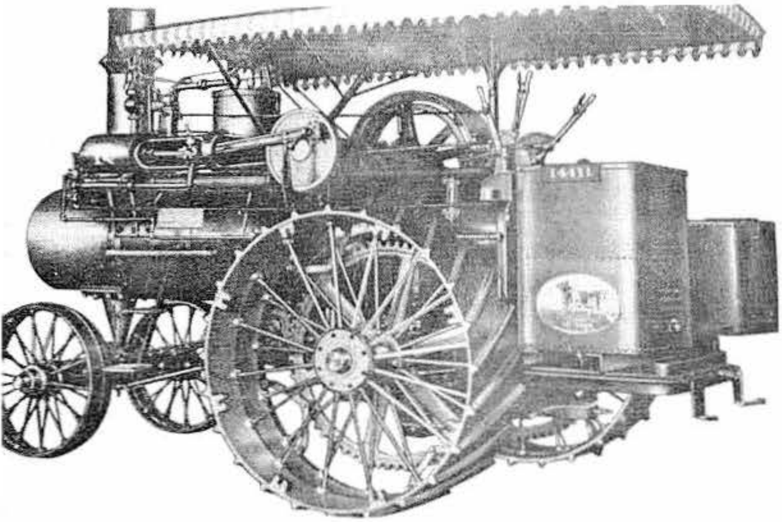
The 18 H.P. Russell steam traction engine, single cylinder, had a 9 x 13-inch cylinder. The engine was fitted with a jacket and mounted on a universal boiler. This engine's valve rod and pump plunger were of steel, fitted and polished. The piston rod and wrist pin were of forged steel, turned and polished. The pin was oiled by means of a centrifugal oiler. The main shafts were large with ample bearing. This picture was taken from a 1907 Russell Co. catalog.



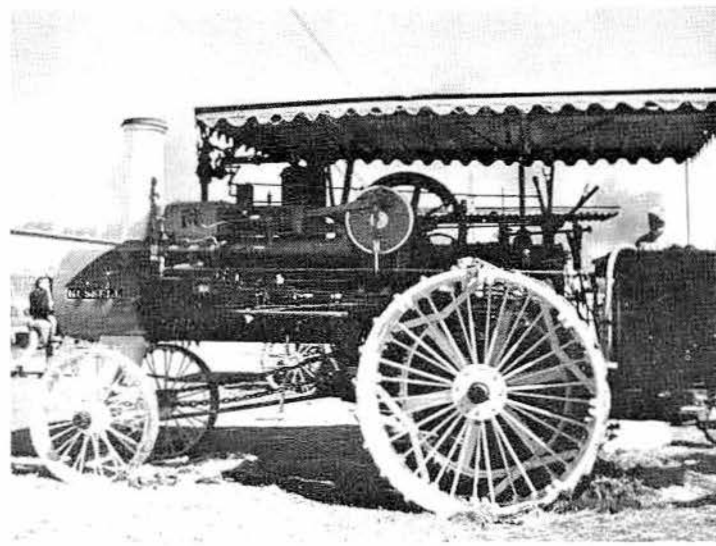
This 18 H.P. Russell steam traction engine, built in 1908, is owned by Earl Rohrer of Hagerstown, Md. It is at the Williams Grove Historical Steam Engine Assn. show, at Mechanicsburg, Pa.



Russell & Co.

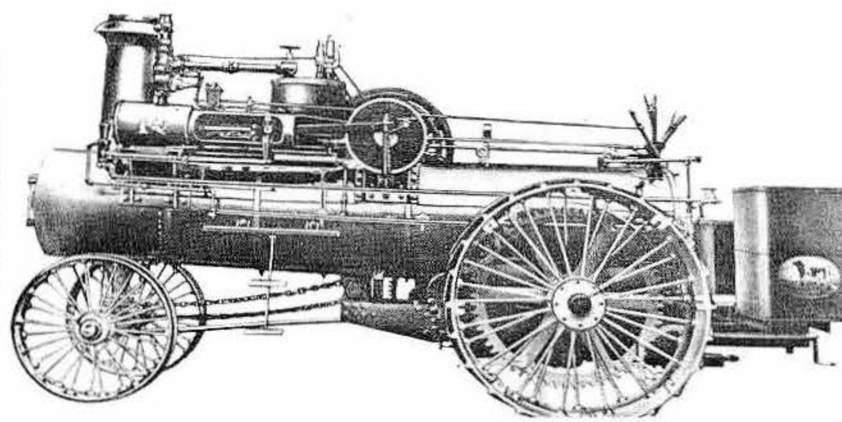


Rated at 53 Belt H.P. or 18 drawbar H.P., this Russell steam traction engine was offered in 1912. It was a powerful engine, built for hard use, and one of the most popular sizes that Russell built. It pulled the 33-inch and 36-inch threshers with all attachments. The over all length was 16 feet. The weight, without water, was 18,550 lbs.

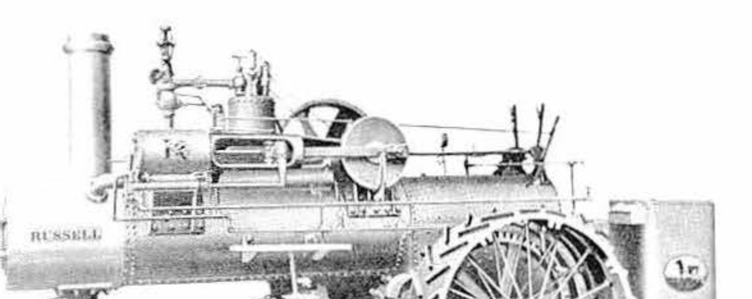


Very well restored is this 20 H.P. Russell steam traction engine, built in 1913. This engine is owned by Leon Melsha of Cedar Rapids, Iowa. It appears at the Midwest Old Settlers & Threshers Assn. show, at Mount Pleasant, Iowa.

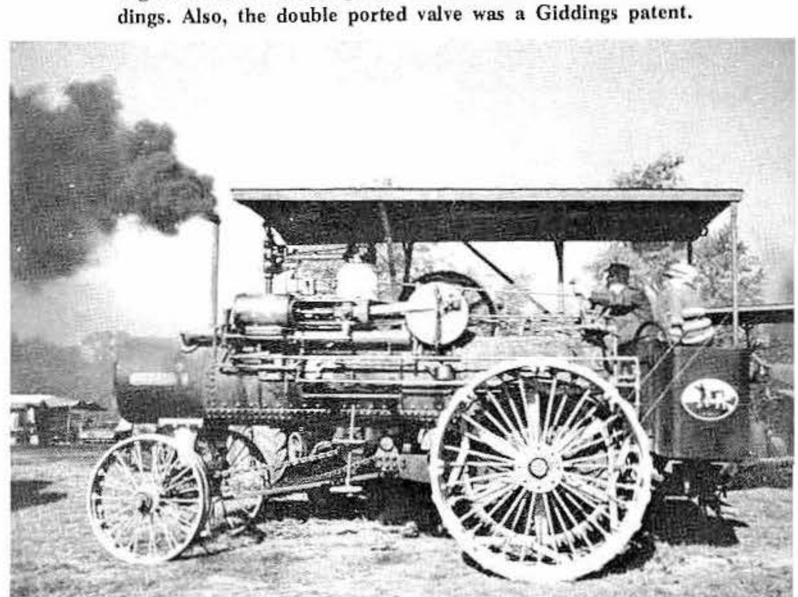
Rated at 67 belt H.P. or 20 drawbar H.P. was this 1912 Russell steam traction engine. This engine's cylinder, steam chest, slides, and half the crank box were cast in a single piece. The cylinder was mounted at the smoke-box end of the boiler, so that the main boxes and crank shaft were near the center of the boiler. It was also lagged to reduce condensation and was oiled by an oil pump, or, on special order, a sightfeed lubricator. Either of which, if kept supplied with oil, would insure durability of the cylinder and piston. The piston rings were self-adjusting.



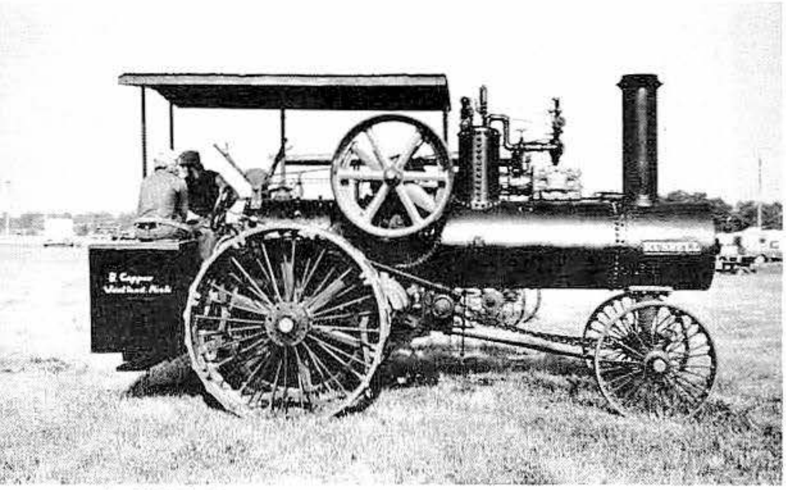
Built in 1921 was this 20 H.P. Russell steam traction engine. This engine used a 8¼ x 12-inch simple cylinder. The total weight, without water, was 20,800 lbs. The Russell boiler was built in accordance with the requirements of the Ohio State Boiler code as well as the code adopted by the American Society of Mechanical Engineers. On all the boilers built in accordance with the Ohio boiler code—that is, the "Ohio Standard," the official stamp, "Ohio St'd—No.____" could be found above the handhole at the furnace end of the boiler. This stamp was a guarantee that the boiler had passed three examinations by an authorized boiler inspector.



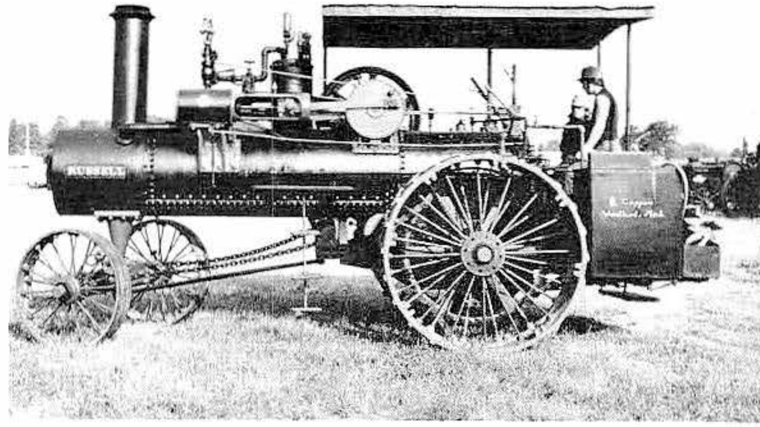
Rating high on the polution scale is this 20 H.P. Russell steam traction engine built in 1920. This engine is owned by Charles Harrison of Scio, Ohio. It is smoking up the Stumptown Steam Threshers Assn. show at New Athens, Ohio. The Russell Co. engines were famous for the double ported valve at the cylinder. Russell also pioneered a good friction clutch on the steam engine. The clutch was patented by a man named Mr. Giddings. Also, the double ported valve was a Giddings patent.



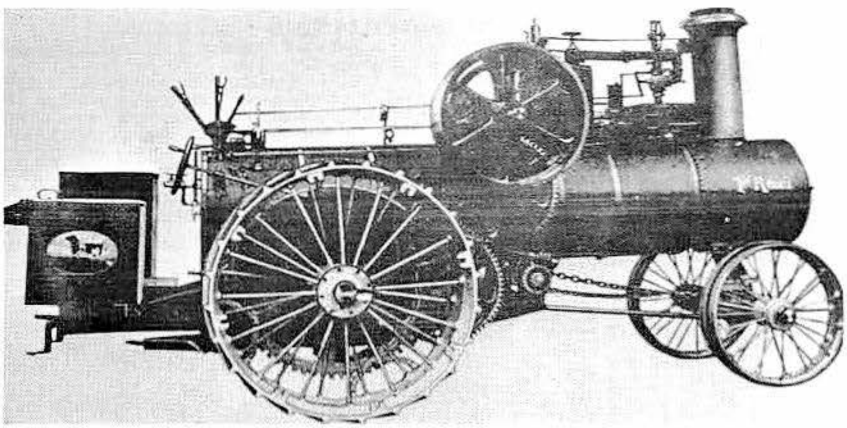
Russell & Co.



A 20 H.P. Russell steam traction engine built in 1923. This engine is owned by Bob Cappon of Woodland, Mich. and appeard at the Michigan Steam Engine & Threshers show at Mason, Mich.

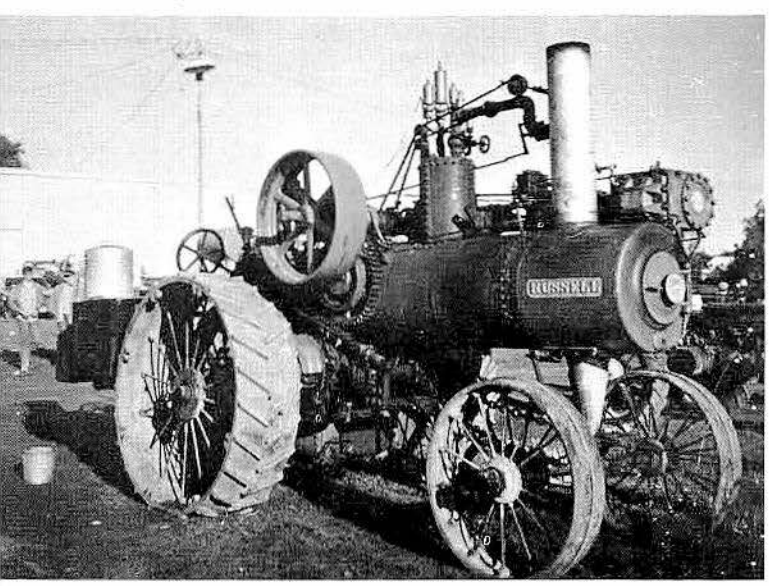


This is the cylinder side of the 20 H.P. Russell engine owned by Bob Cappon of Woodland, Mich. Note the three step-plates used to gain access to the cylinder and shafts.



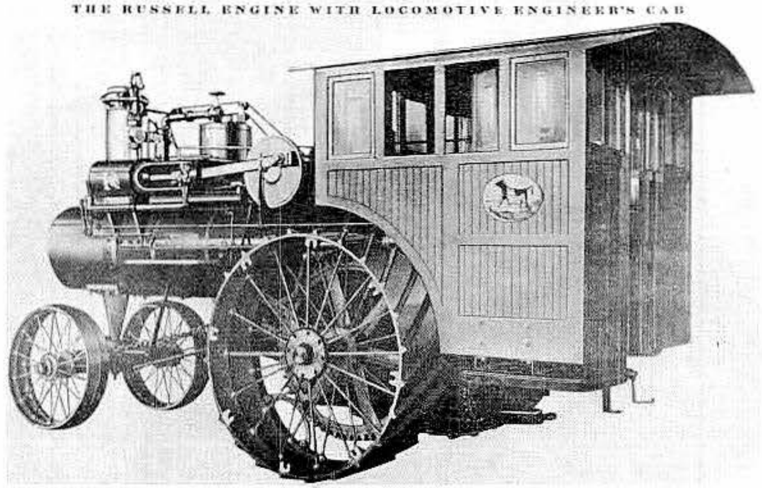
Built in 1912 was this 25 H.P. Russell steam traction engine. This engine used a 10 x 13-inch simple cylinder and either a standard or universal boiler. The speed of this engine was 2.28 miles per hour. The weight, without water, was 23,150 lbs. It was rated at 83 belt H.P.

This 22 H.P. Russell compound steam traction engine, built in 1895, is owned by Merlin Elrod of Justus, Ill. It appears at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa.

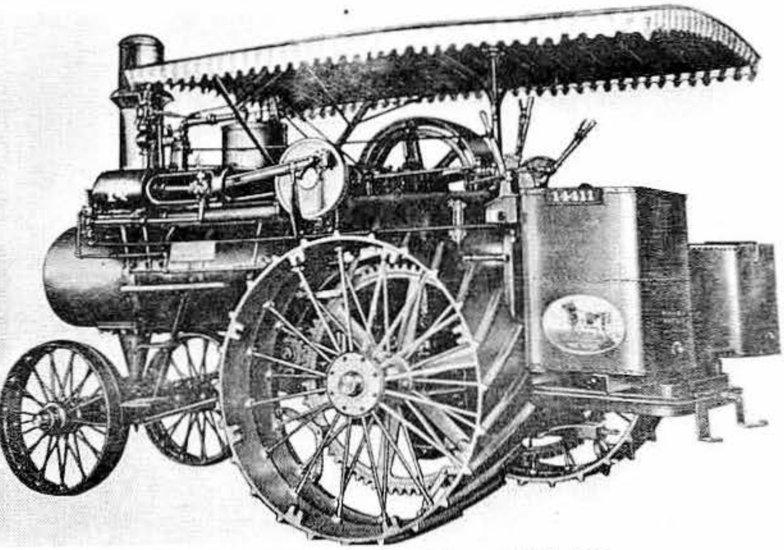


This is the 1912 style locomotive cab. It was built in the most substantial manner of thoroughly seasoned lumber. The frame was mortised and tenoned and bolted together. The sides and front were matched lumber and the openings in front and side fitted with sash and windows. All finish was in the most tasteful manner. The cab cost $100 extra.

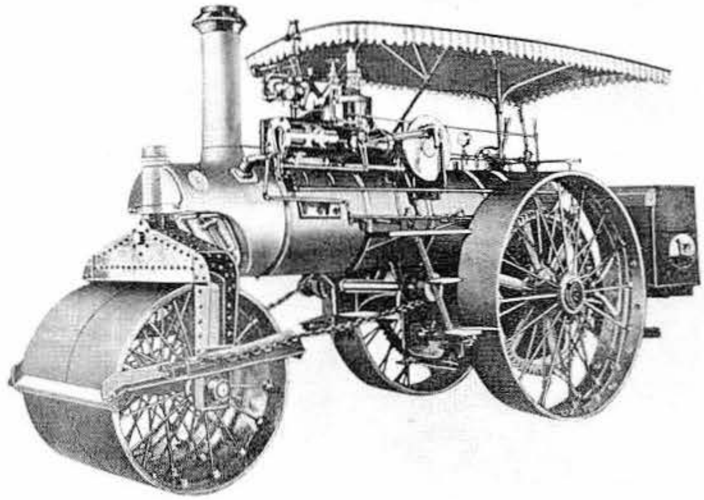
THE RUSSELL ENGINE WITH LOCOMOTIVE ENGINEER'S CAB



Russell & Co.

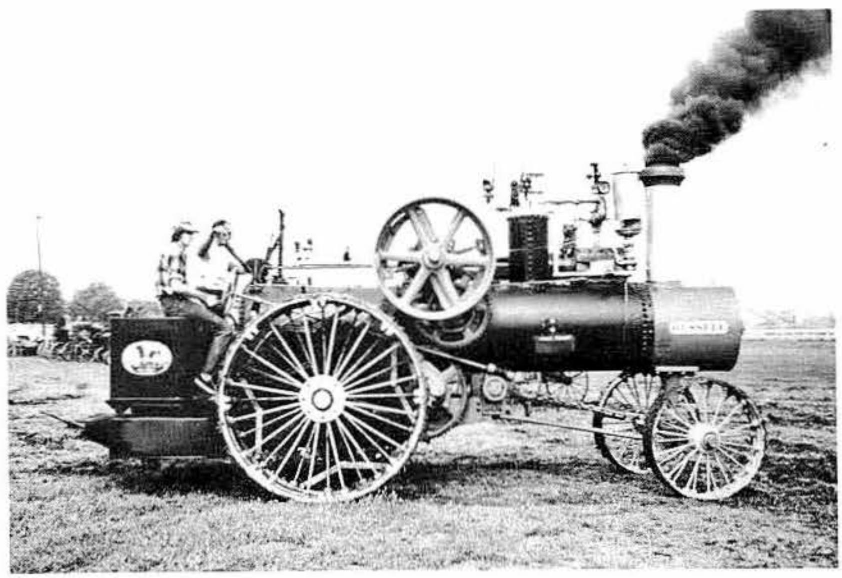


Bearing production No. 14411 is this 1912 model 25 H.P. Russell steam traction engine. This engine is a general utility model for heavy hauling and plowing. It featured steel gearing, great traction power, and large water capacity.

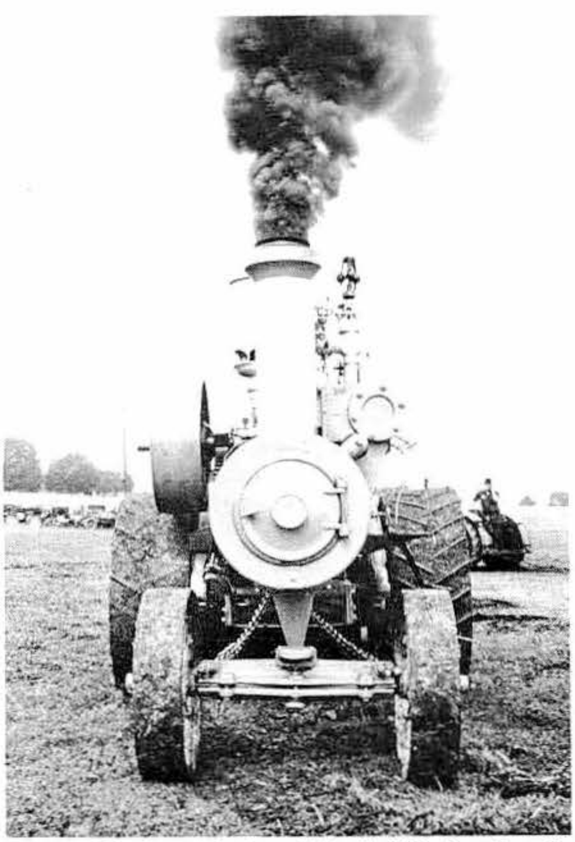


A Russell steam road roller was offered in 1912. This is a combination road roller and hauling engine. The rear wheels had detachable cleats which could be quickly removed so the engine could be used on a smooth road or for rolling purposes.

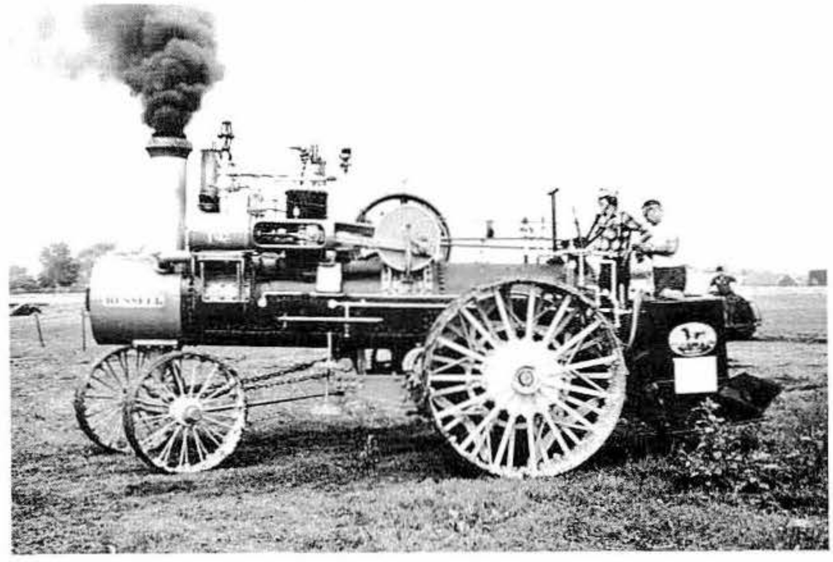
Beautifully restored, this 25 H.P. Russell steam traction engine, built in 1919, is owned by J. Crowe of Navarre, Ohio. It is smoking up the sky at the Tuscarawas Valley Pioneer Power Assn. show at Dover, Ohio.



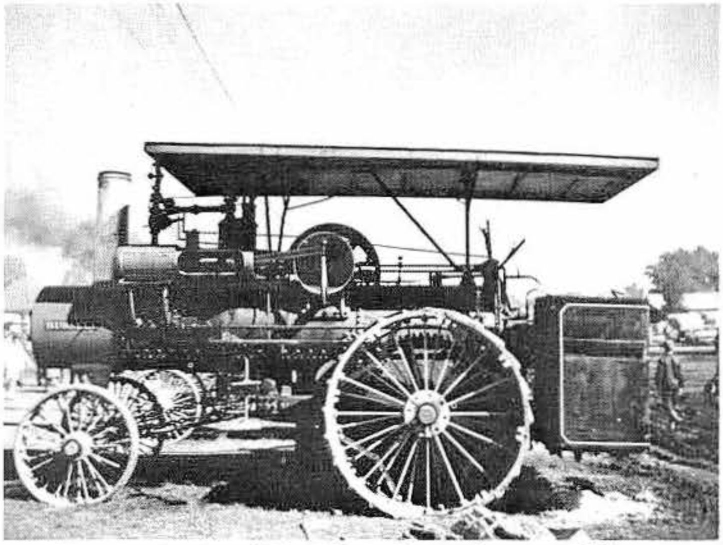
This is the cylinder side of the 25 H.P. Russell steam traction engine owned by J. Crowe, Navarre, Ohio. Throughout its entire production, Russell used a bull as its trademark.



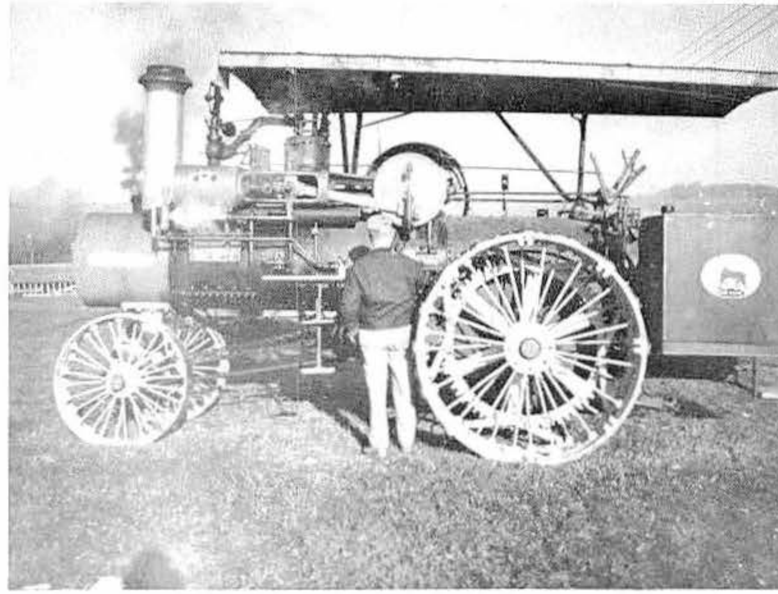
Here is a thresherman's view of the 25 H.P. Russell engine owned by J. Crowe of Navarre, Ohio. By 1919, Russell used a single cast iron smoke box door. This engine has been fitted with an extra large accessory chime whistle, visible just to the left of the smoke stack.



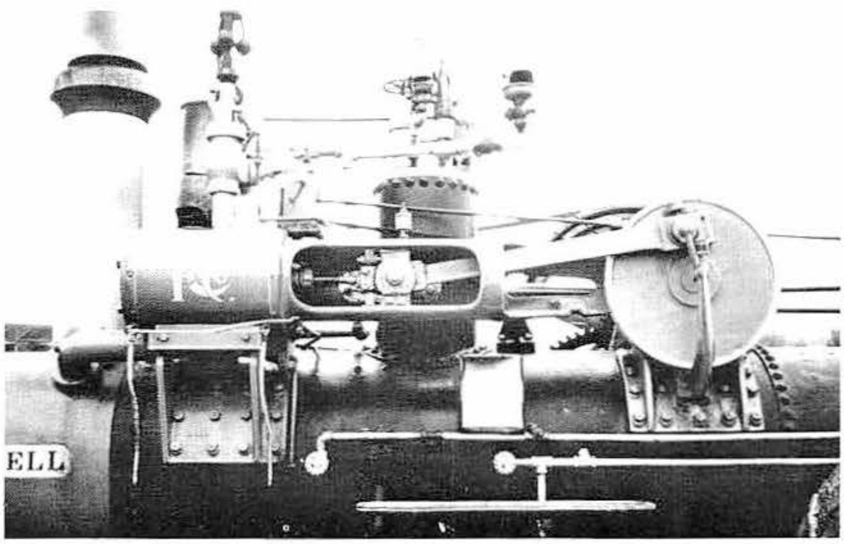
Russell & Co.



The Fricke Brothers of Mount Union, Ia., are the owners of this 25 H.P. Russell, which was built in 1922. It is appearing here at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Ia.

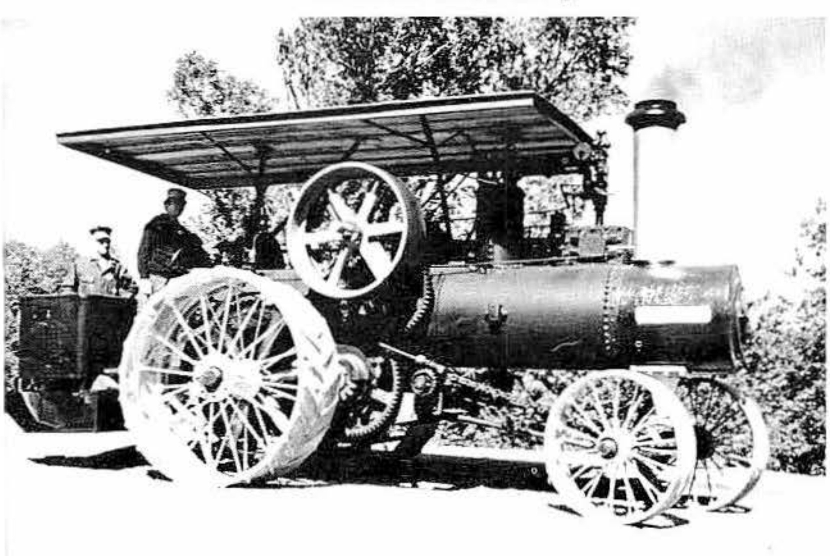


Willis Abel of Finleyville, Pa., is the owner of this 25 H.P. Russell, built in 1920. This finely restored engine is appearing at the Tri-State Historical Steam Engine Assn. show at Hookstown, Pa.

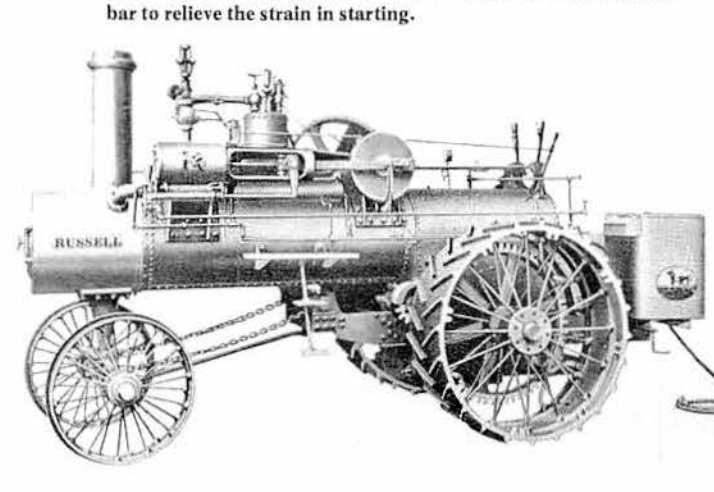


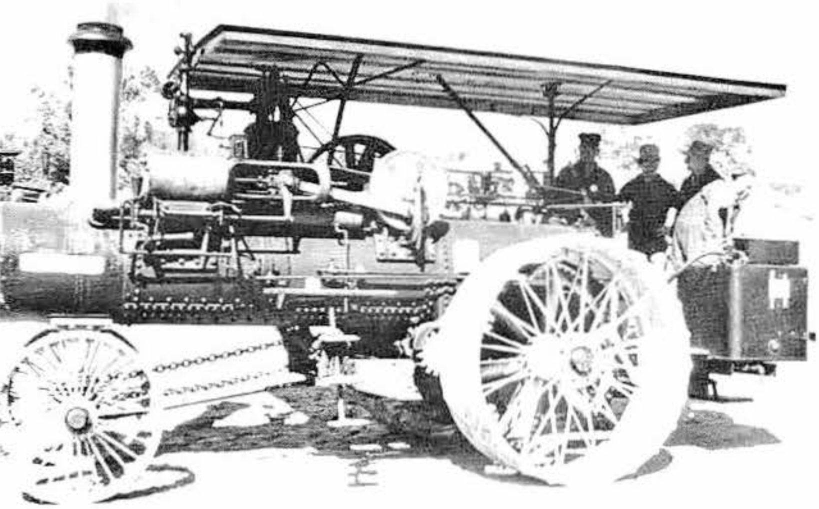
The details of the Russell simple single cylinder engine are quite visible in this close-up. This engine is mounted on the 25 H.P. engine owned by J. Crowe of Navarre, Ohio. This is a front-mounted cylinder, with a center crank. Such a mounting provided a very short exhaust run to the smoke stack. The exhaust pipe is visible running from the cylinder to the smokebox, just below the stack.

This 25 H.P. Russell steam traction engine, built in 1923, is owned by Lenus Missler of Bellevue, Ohio. It is shown at the Richland County Steam Threshers Assn. show, at Mansfield, Ohio. The 25 H.P. Russells had a 75 belt H.P. rating.



This is the 1921 version of the 25 H.P. Russell steam traction engine. This engine used a 9 x 13-inch simple cylinder, on either a standard or a universal boiler. The weight, without water, was 22,800 lbs. The bail would hold the entire weight of the engine without injury. It was fastened by large plates to the side of the boiler so that the whole power of the engine could be exerted on a pull with no danger of the bail breaking. It carried the draw bar in a convenient position, so that coupling and uncoupling could be done quickly and easily. Also used was a spring draw bar to relieve the strain in starting.

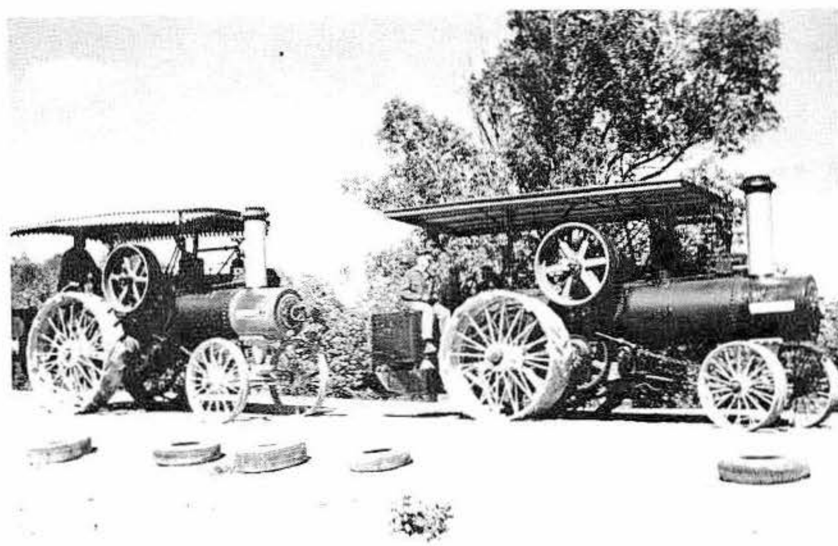




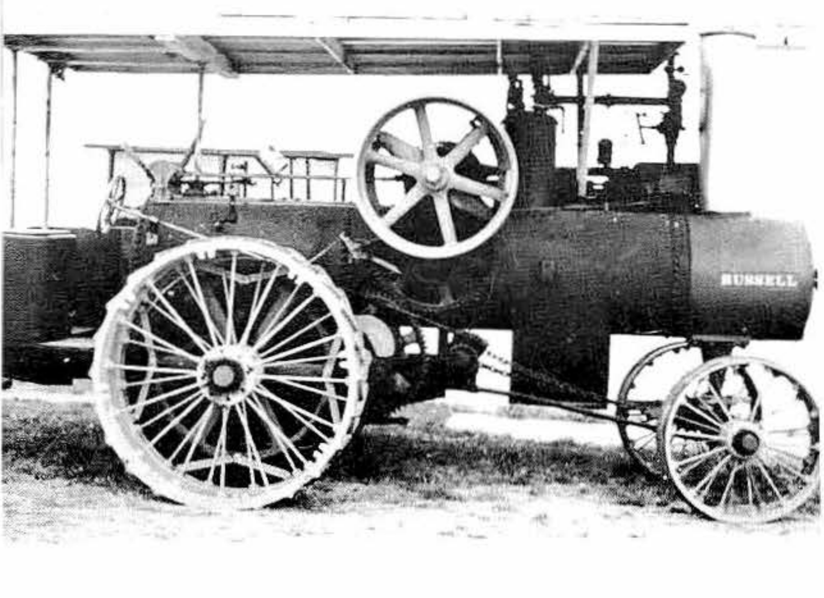
This is the cylinder side of the 25 H.P. Russell steam traction engine owned by Lenus Missler of Bellevue, Ohio.

This 30 H.P. Russell steam traction engine, built in 1918, is owned by Levine and Raymond of Dekalb, Ill. It is rated at 90 belt H.P.

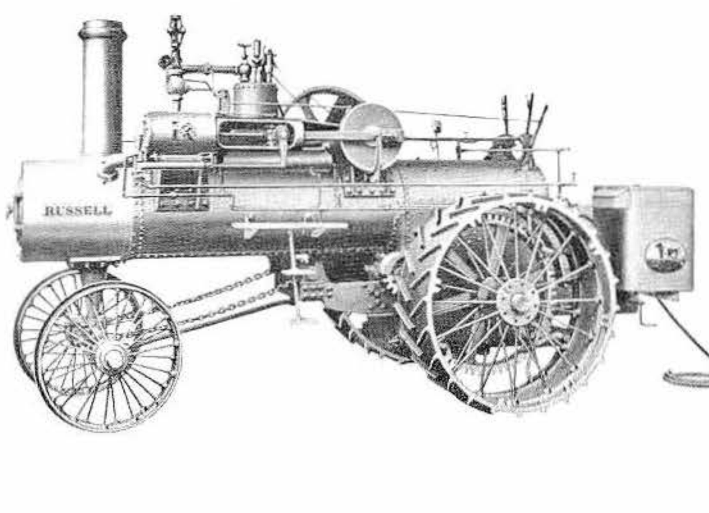
Two Russells in a line. The left one is a 12 H.P. built in 1916, owned by Elmer K. Wenger of Dalton, Ohio. The other is a 25 H.P. Russell owned by Lenus Missler of Bellevue, Ohio. They are participating in a parade at the Richland County Steam Threshers Assn. show at Mansfield, Ohio.



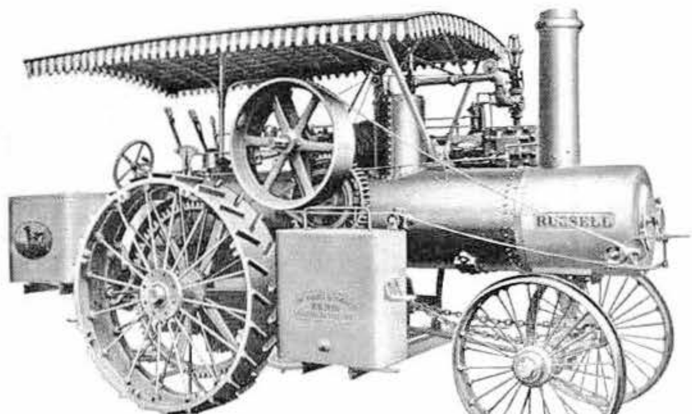
This is the flywheel side of the 30 H.P. Russell steam traction engine owned by Levine and Raymond of Dekalb, Ill. The Russell Co. made steam traction engines from 6 to 150 H.P., of simple and compound cylinders; steam portables; automatic steam engines; stationary types; return flue steam portables; saw mills; four wheeled water tanks; New Russell thresher; and the Boss feeder knife grinder.



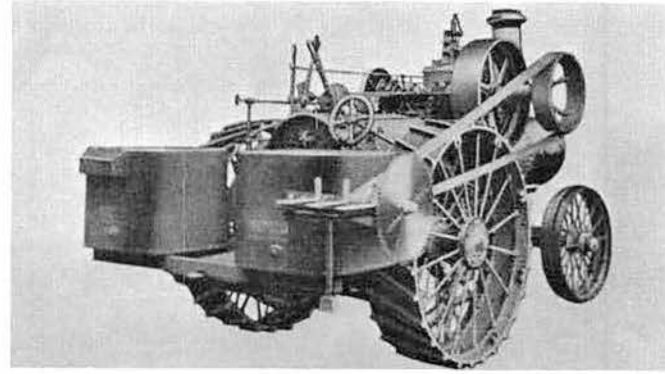
The 1921 model 30 H.P. Russell steam traction engine used a 10 x 13-inch simple cylinder, and either a standard or universal boiler. The weight, without water, was 24,800 lbs. The Russell steam traction engine used black for the boiler and dome; the smokestack was silver; the smoke-box was orange-red; the levers orange-red; ground wheels were yellow; and the cylinder and fly wheel were orange-red, as was the top of the smoke stack.



Russell & Co.



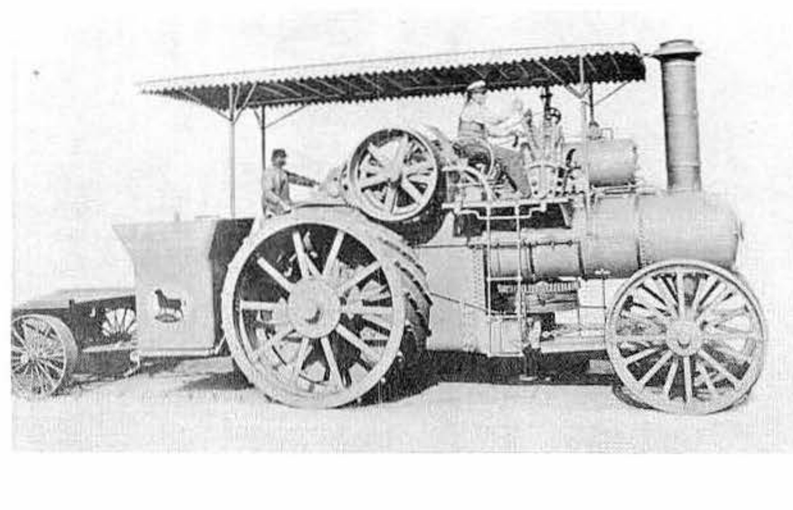
This is the flywheet side of a 1921 model 30 H.P. Russell steam traction engine, complete with canopy. This Russell is equipped with side tanks, which were furnished as extra equipment when additional water supply was needed for long hauls. It is rated at 90 belt H.P.



Another of Russell's numerous accessories is shown on this 30 H.P. Russell steam traction engine. This engine has the 1921 model wood saw attachment bolted to the water tank.

No, this is not a head-on in action. It is two Russells and their owners showing off their respective prowness at climbing steep grades. This scene took place at the National Threshers Assn. show at the Fulton County Fairgrounds in Wauseon, Ohio. Climbing steep grades and holding at the top of the grade, as these two engines are doing, takes a good engine and a well experienced engineer. The Russell Co. was sold at auction in 1927, but the Russell Service Co., which handled parts for the engines, remained in business until 1942.

This was heavy trucking in 1907. The motive power for a string of road wagons is a 1907 model 150 H.P. Russell compound road locomotive. As far as is known, there are no examples of these big engines remaining today. The engineer steered this vehicle by the means of levers rather than with a steering wheel, with the levers attached to the steam-operated powering steering mechanism. The unit is equipped with a cable wind or winch, probably for pulling itself or its wagons out of soft spots in the road. An excellent rail network in the U.S. kept these engines from becoming popular in their own era. Later, vast improvements in the national highway system and in motor truck design spelled a death knell for this type of motive power. However, in England, traction engines similar to this provided heavy transportation facilities right through World War II.



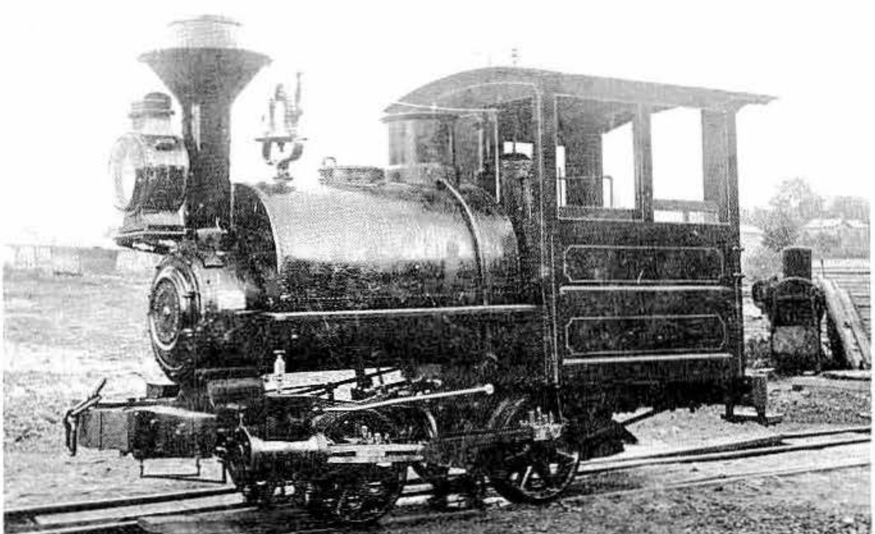
Ryan & McDonald

John B. McDonald's earliest engineering feat was the building of the Belt Line Tunnels at Baltimore, Md., at a cost of $6 million. Thereafter he and Mr. Ryan moved to Waterloo, N.Y., and set up in the manufacturing business. They erected a large factory on the North side of the New York Central tracks, about midway between Church and Swift Streets. There the company built steam traction engines, steam engines, and large machinery.

However, due to lawsuits and unpleasantness arising in the town, the company moved to Baltimore, Md., in February, 1890. The chime whistle, which had been on the roof of the Ryan & McDonald plant, and which had called Waterloo men to work and given notice of fires in the village for several years, was taken to Baltimore with the machinery of the plant.

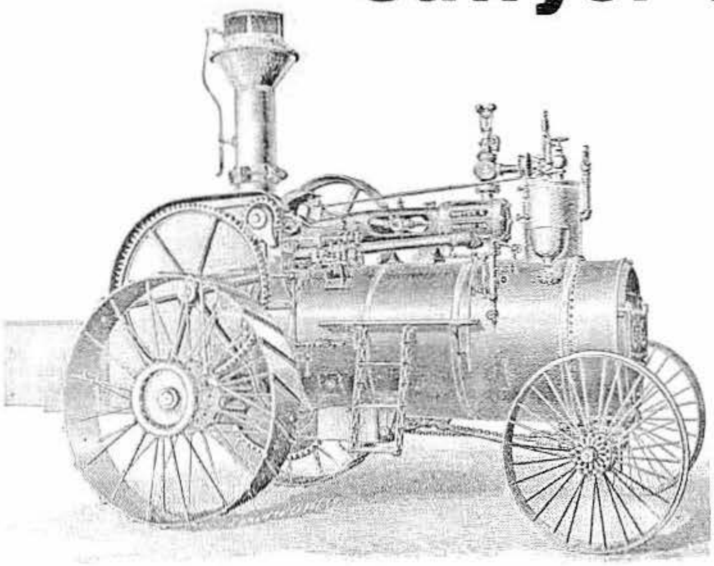
McDonald went to New York City, where he distinguished himself as the builder of that city's subway system. A medal was given to him in token of his unusual services in connection with the building of the first subways in New York City.

Little is known about the Ryan & McDonald steam traction engines, but it is well assumed that few were made and that such engines were certainly not the company's main product.



A Ryan & McDonald switching engine was built by Ryan & McDonald of Waterloo, N.Y. This steam engine is using the Ryan & McDonald steam traction engine boiler. John B. McDonald and Ryan moved to Waterloo and started a manufacturing business. They erected a large manufactory on the north side of the New York Central tracks, about midway between Church and Swift Streets. They built steam traction engines and railroad engines, and large machinery. This railroad engine is the only known photo of a Ryan & McDonald vehicle. As far as could be ascertained, there are no known illustrations of the Ryan & McDonald traction engine.

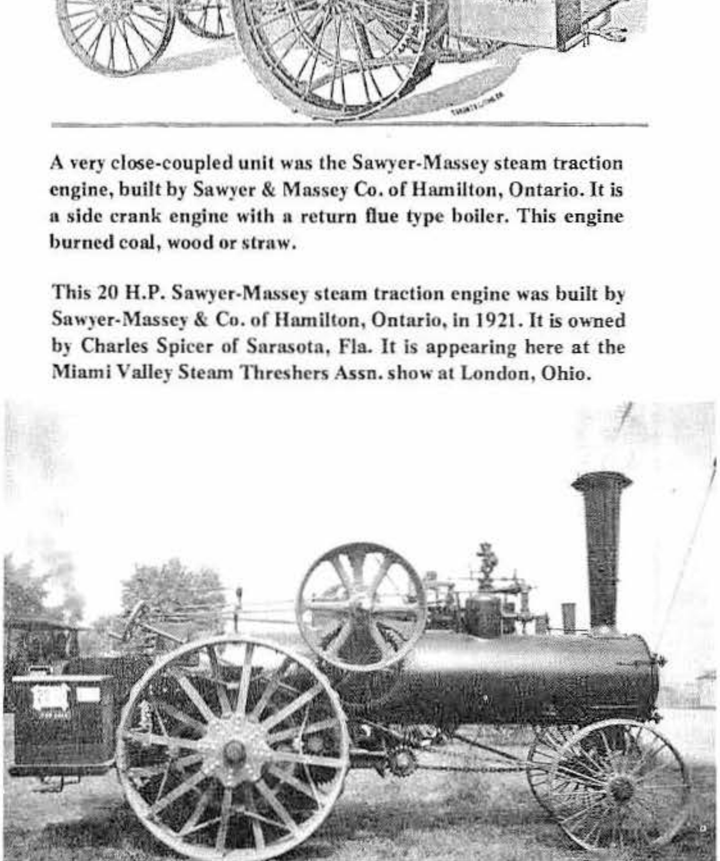
Sawyer & Massey



This was billed as the "New Style" Sawyer-Massey steam traction engine. This engine is a center crank with a return flue boiler. It burned coal, wood or straw.

A very close-coupled unit was the Sawyer-Massey steam traction engine, built by Sawyer & Massey Co. of Hamilton, Ontario. It is a side crank engine with a return flue type boiler. This engine burned coal, wood or straw.

This 20 H.P. Sawyer-Massey steam traction engine was built by Sawyer-Massey & Co. of Hamilton, Ontario, in 1921. It is owned by Charles Spicer of Sarasota, Fla. It is appearing here at the Miami Valley Steam Threshers Assn. show at London, Ohio.



When John Fisher moved from New York State in 1835 and built a small shop in the pioneer hamlet of Hamilton at the western tip of Lake Ontario, he established an industrial enterprise that was destined to become one of the largest threshing machinery industries in Canada. His shop was small and his tools few, but Fisher was an enterprising man and the following year, 1836, he constructed the first threshing machine ever built in Canada. Although crude, it worked well and excited much interest among the settlers who had only the flail to beat out their grain.

Realizing the possibilities but lacking capital, Fisher appealed to his cousin, Dr. Calvin McQuesten of Lockport, N.Y., to enter into partnership with him. McQuesten proved an able executive and under his management the firm of Fisher and McQuesten prospered. The original threshing machine was improved and other lines added. In the early 1840s L. D. Sawyer and two brothers, nephews of McQuesten, came to work for their uncle and, as the partners grew older, gradually assumed control of the business.

After the death of John Fisher in 1856, the name changed to L. D. Sawyer and Company. The factory, known as the Hamilton Agricultural Works, turned out reapers, mowers and other implements in addition to separators, horsepower and tread mills.

In the early 1860s the company began to make portable steam engines, and in 1887 added horse drawn machinery to the output and became Canadian agents for Aveling & Porter road rollers made in England.

In the year 1892, H. A. Massey, president of Massey-Harris Co., became associated with the firm and the name was changed to Sawyer-Massey Company, Limited. All engines built after 1910 had Sawyer-Massey in large letters forming a complete circle on the smoke box door.

The first portables and early traction engines were all of the return flue type. In the late 1880s a change was made to the open bottom, locomotive type boiler without a dome. Hundreds of little 13 H.P. simple, single cylinder, side mounted engines were built in the 1890s. Soon Sawyer & Massey was turning out 18, 20 and 22 H.P. for the eastern trade.

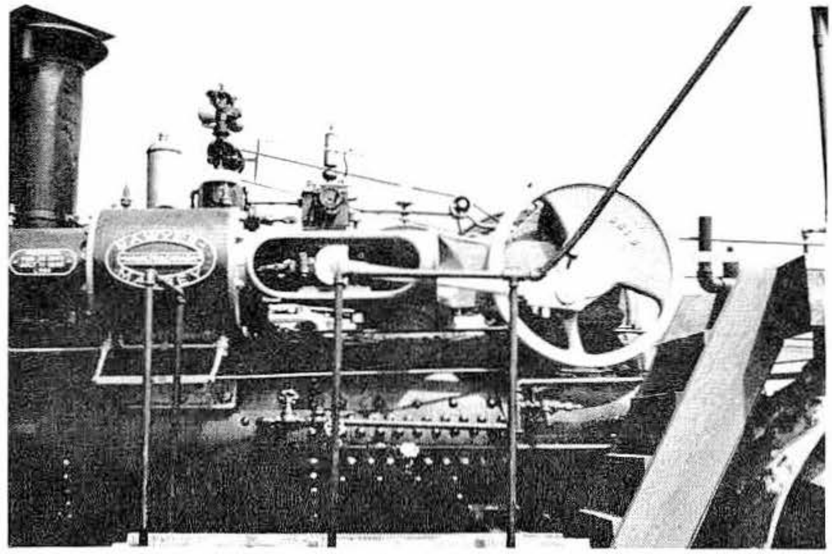
The Western Canada market was not overlooked. A large warehouse was constructed in Regina to supply the prairie needs and the demand for heavy plowing engines was met by designing a rearmounted engine which was built in both simple and tandem compound sizes up to 35 H.P. Except for the re-arrangement of the gears and the omission of springs, both types of engines were practically the same.

Sawyer-Massey did not overlook the gasoline engine and, seemingly, worked backwards at the idea by building the first gas tractors for the West in the 30-60 H.P. size, using the steam engine road wheels and gearing and mounting a slow speed vertical four cylinder engine lengthwise on the frame and driving the belt wheel and traction with a bevel gear. Succeeding models were built in smaller sizes but retained the slow speed motor and the same general design.

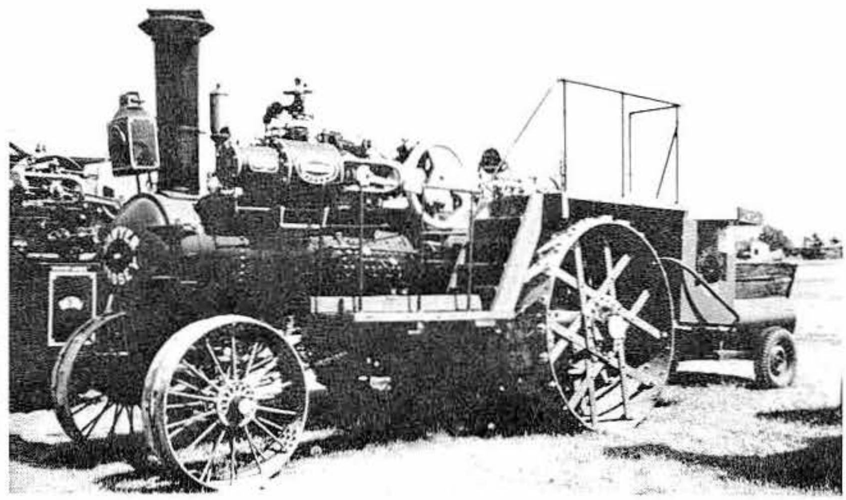
Postwar conditions in the 1920s caused the firm to concentrate on the production of road rollers, rock crushers, power graders, etc., leaving their threshing machinery soon to become only a memory to those who used to operate them.

Sawyer & Massey

A front view of the 25 H.P. plow engine owned by Barett Muir of Shanty Bay, Ontario, shows off the height of the steps and railed catwalks along the side of the unit. A large locomotive-type kerosene light has been installed on the smoke stack. Sawyer & Massey used a huge one-piece cast iron door on its smoke box.

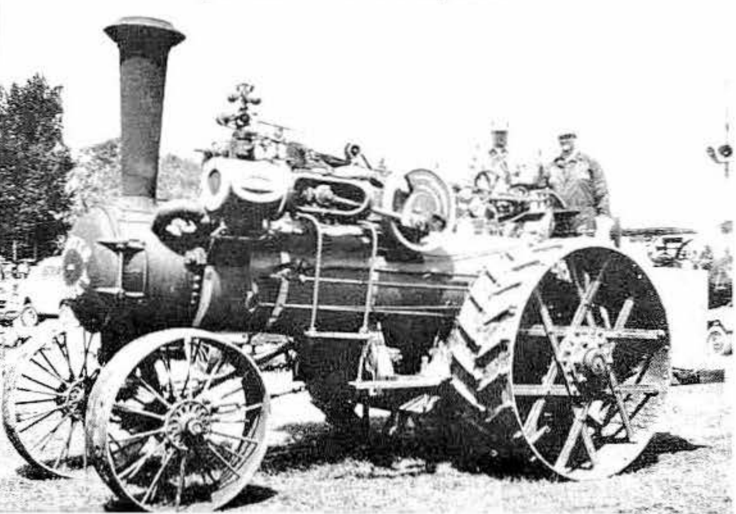


A close-up of the Sawyer-Massey compound cylinder gives a good view of the short stroke used on these engines. This was a side-mount, rear-crank type of engine. The compound cylinder produced 25 H.P. on the drawbar.



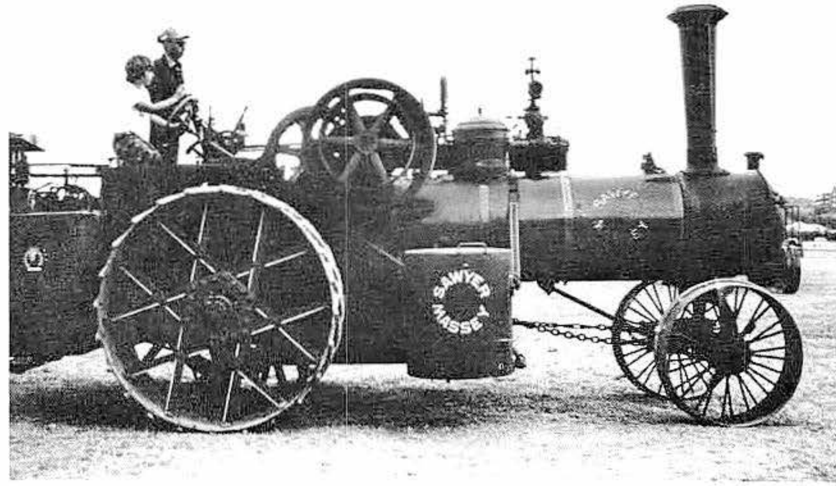
Ample work room was provided by the set up of catwalks and ladders on the side of this 25 H.P. Sawyer-Massey compound steam traction engine built in 1911. This engine is owned by Barett Muir of Shanty Bay, Ontario. It appears at the Ontario Steam & Antique Preservers Assn. show at Milton, Canada. This Sawyer-Massey compound plow engine is believed to be the only one left today in good running order.

Built in 1913 was this simple cylinder 25 H.P. Sawyer-Massey steam traction engine. It is owned by Sherwood Hume of Milton, Ontario, and is shown here participating in the Norwich & District Historical Society show at Ontario. Unlike the compound cylinder plow engine, Mr. Hume's engine uses a more conventional side platform for access to the cylinder.



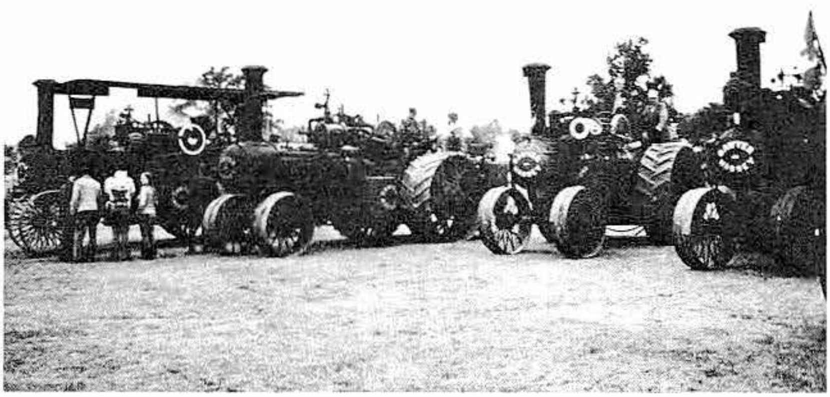
Bearing Serial No. 3368, this is a 25 H.P. Sawyer-Massey steam traction engine built in 1913. It is owned by W. Nichols of Lakeside, Ontario, and is appearing at the Ontario Steam & Antique Preservers Assn. show at Milton, Ontario. This engine weighs 11 tons. The Sawyer & Massey Co. had its roots in a small machine shop opened in Hamilton in 1835 by John Fisher, a native of Upstate New York. The enterprise was destined to grow into one of the largest threshing machinery industries in Canada.

Sawyer & Massey



Here is a thresherman's view of the 76 H.P. Sawyer-Massey steam traction engine built in 1918. This engine is showing off its tremendous belt power at the Ontario Steam & Antique Preservers show at Milton, Ontario.

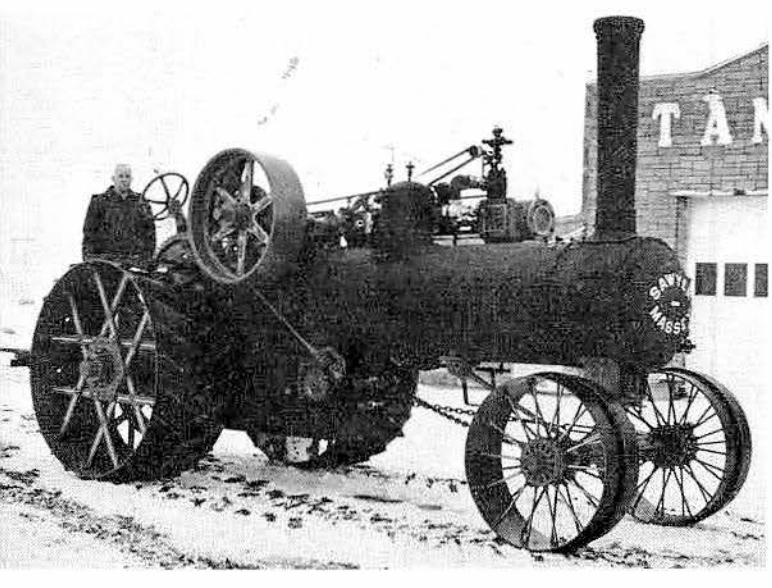
This 25 H.P. Sawyer-Massey steam traction engine, built in 1914, is owned by Don Armstrong of Ontario. It is participating in the Ontario Steam & Antique Preservers Assn. show at Milton. John Fisher in 1836 constructed the first threshing machine ever built in Canada. This was the foundation of the Sawyer & Massey Co.

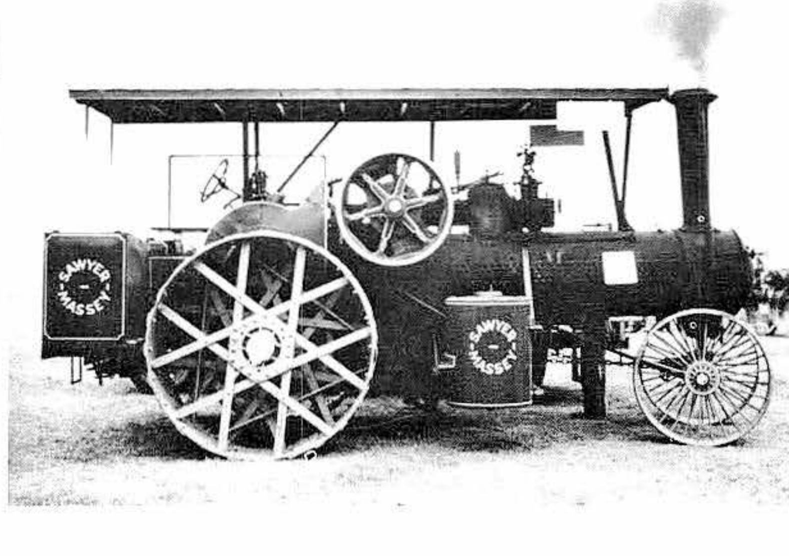


Here is one of a kind picture—four Sawyer-Masseys all in a line. From left to right are a 76 H.P., owned by the Ontario Department of Food & Agriculture; a 25-75 H.P. owned by Don Armstrong; a 25 H.P. owned by W. Nichols, and a 25-75 H.P. compound, owned by Barett Muir. The scene was at the Ontario Steam & Antique Preservers show at Milton, Ontario.

Showing its fly wheel side, is this 68 belt H. P. Sawyer-Massey steam traction engine, built in 1922. It is owned by the Reynolds Museum, Wetaskiwin, Alberta, Canada. Specks in the photo are snowflakes. It came to the Reynolds Museum from a sawmill in northern Alberta, Canada.

This 76 H.P. Sawyer-Massey steam traction engine, built in 1918, is owned by the Ontario Department of Food & Agriculture. It is shown at the Ontario Steam & Antique Preservers show. Sometime in the early 1890's three members of the Massey family purchased a 40% interest in the L.D. Sawyer Co. of Hamilton. At that time Sawyer was one of the largest makers of steam traction engines and threshing machines in Canada. No corporate relation was ever developed between that concern and Massey-Harris Co. In 1910 when Sawyer-Massey undertook to increase the capacity of the plant for the production of steam threshing equipment, the Massey interests were withdrawn.





Scheidler Machine Works

Late in the 1850s the Newark Machine Co. of Newark, Ohio, failed, the operation being continued by John H. McNamar, who operated for the receiver until 1861. In that year John McNamar formed a partnership with Reinhardt Scheidler, a young, promising machinist, recently from his native Germany.

In 1870, this firm of Scheidler and McNamar built its own substantial set of buildings on South Third St., in Newark, Ohio. This later became the plant of the McNamar engine works, and presently is occupied by Airesman Ignition. By 1881 the personalities of the partners made it necessary to dissolve the firm of Scheidler and McNamar. McNamar retained the works on South Third St., where he built a complete and substantial factory works.

During his lifetime Reinhardt Scheidler held more than 67 patents on improvements in steam engine design and attachments. Some Scheidler engines were equipped with a steam dome—others with a superheater which served as a dome. Some engines had friction clutch—others had no clutch. Engines could be ordered with a balanced "D" Valve or with Scheidler's Patent Piston Valve. All Scheidler engines were very compact for their power, which misled many seasoned engine man.

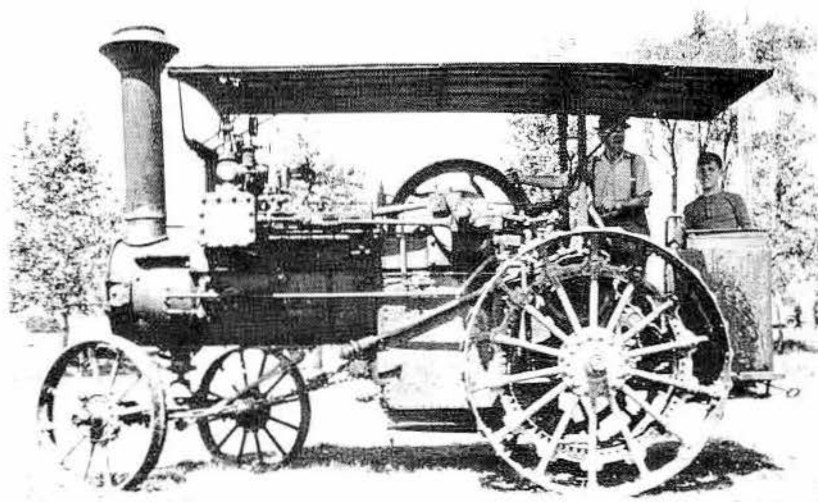
Scheidler steam traction engines were built in sizes from 10 H.P. with a 7 x 10-inch cylinder. Scheidler stationary engines were built in sizes from 16 H.P. with a 8½ x 10-inch cylinder to 125 H.P. with a 13 x16-inch cylinder. The Scheidler engines presented an unorthodox appearance by having the valve-slide or piston type outboard to the cylinder. The cranks to drive the valve or links in reversing type engines were correspondingly outboard of the cross head and connecting rod, with the steam chest on outside. The reasons for this were to eliminate eccentrics, since the engine crank shaft or main shaft could be lowered to just clear boiler wagon top. Also, the smaller bearing surface presented less friction than would an eccentric.

One weakness of the Scheidler engine was the support of the crown sheet. A lifetime engine man once remarked that no one in his right mind would buy a Scheidler, since there were always around the factory several old Scheidler boilers—every one of which had blown down in the crown sheet.

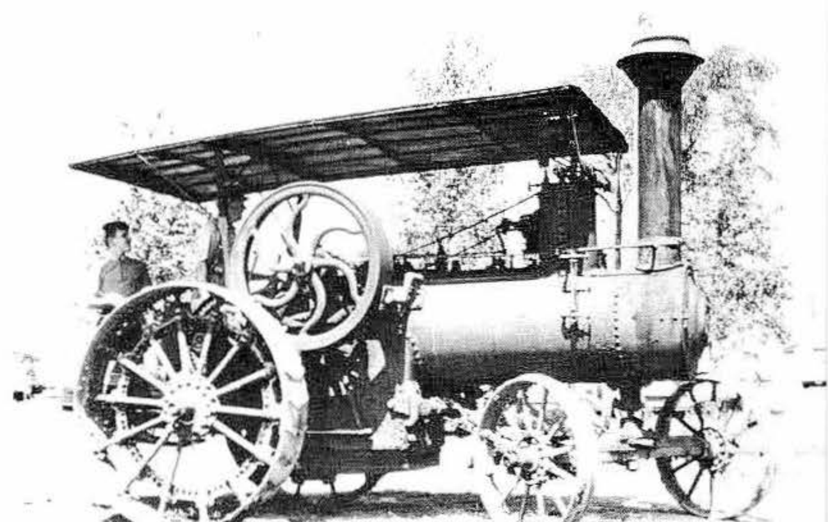
Scheidler did not stay his crown sheet in the customary way, using instead crown bars hot riveted to the crown sheet. These bars were in turn supported by 5/8-inch bolts to crown foot details, riveted to the underside of the boiler wagon top. This was the weakness that cost Reinhardt Scheidler his life. On the afternoon of April 29, 1903, an engine under test in the factory blew down her crown sheet, killing Scheidler instantly and injuring several workmen near the engine. The flywheel from that engine described an arc and landed on 1st Street, breaking like it was made of glass. The remainder of the engine was propelled some 50 feet and lodged in the corner of a building, where until recent years the repaired brick bore mute testimony.

Since 1903 was in the hey-day of steam traction engines, the Scheidler works continued to build engines and prosper. Gone, however, was the color and showmanship which had marked the building. Gone, also were the full page articles in competitor's catalogs knocking Scheidler's Patent Piston Valve. Moreover, in Reinhardt Scheidler's death, Newark lost one of her foremost boosters. As owner of one of the largest industries of its kind in the state, and as vice-president and director of the Newark Savings Bank, he sought every advantage for Newark. The papers of that period credit Mr. Scheidler with building the first street car line in Newark, and with building the Electric Interurban Line to Granville, Ohio. This was among the first interurban lines in the country.

With the decline in the demand for steam agricultural engines, the Scheidler plant became more and more a custom machine shop, building its last few engines around 1925. The principal building of the Scheidler works still stands on 1st Street, presently occupied by the Electric Wholesale Co.

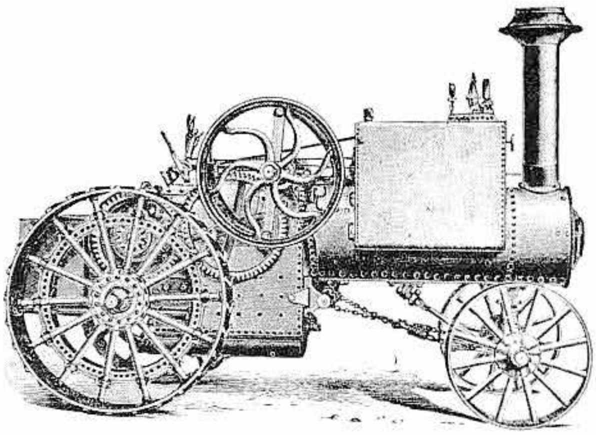


Over 90 years old is this 10 H.P. Scheidler steam traction engine, built by the R. Scheidler Machine Works of Newark, Ohio, in 1886. This engine is owned by the Rought & Tumble Engineers Historical Assn. of Kinzer, Pa. It is engine No. 572.

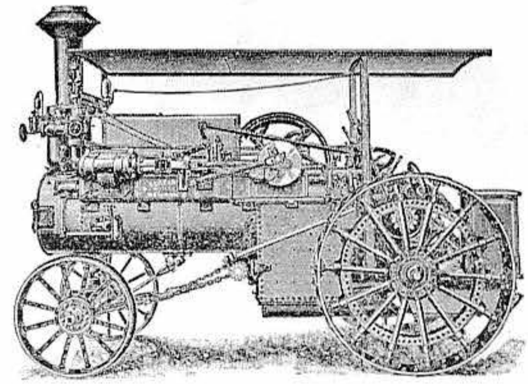


This is the flywheel side of the 1886 model 10 H.P. Scheidler steam traction engine owned by Rough and Tumble Engineers Historical Association of Kinzer, Pa. In 1861, John McNamar and Reinhardt Scheidler formed a partnership, The Scheidler Machine Works, which was incorporated in 1903.

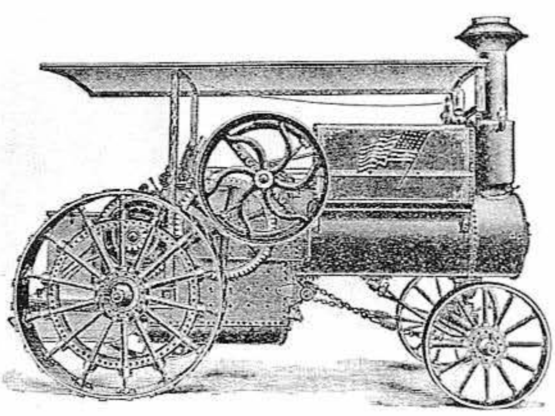
Scheidler Machine Works



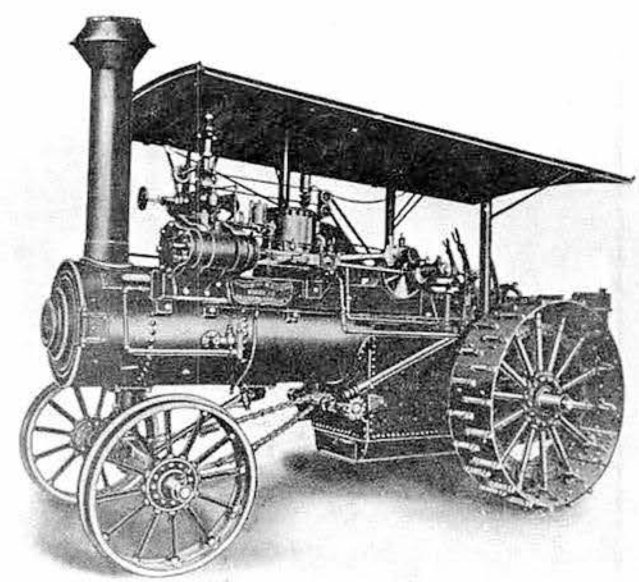
A 20 H.P. Scheidler steam traction engine, pictured in a 1903 Scheidler Co. catalog, gives a good view of the friction clutch and the extra large water tank on side of boiler. Scheidler, in 1903. made engines in 10; 12; 14; 16 and 20 H.P. sizes. The throttle, sawyer's and engineer's valve was cast in one piece. The throttle valve was used for shutting off the steam entirely from the boiler, when the engine was not in use. The sawyer's and engineer's valve was always under complete control of the operator and could be shut off instantly in time of danger.



By 1903 the company was offering this "Improved" 10 H.P. Scheidler steam traction engine. This engine had a balanced piston valve and patent superheating dome. Each engine was thoroughly tested, the boiler inspected, and all working parts adjusted before it left the works.



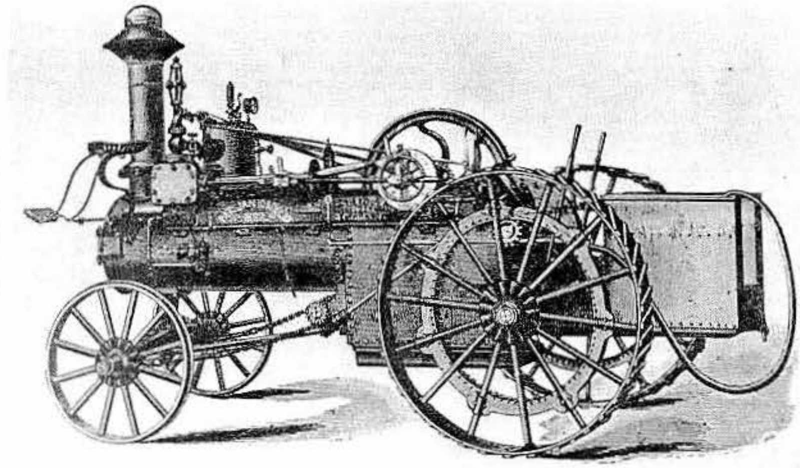
This is a 1903 model 12 H.P. Scheidler steam traction engine. This engine's main axle was behind the fire box. It was a large, solid steel shaft, 3 inches in diameter. It revolved in 14-inch boxes, easily adjusted, lined with the very best babbitt, and well provided for lubrication. By having the axle at the rear of the boiler the objection of rearing in front when ascending steep grades was overcome. This engine is fitted with a boiler-mounted water tank and platform fuel bunker.

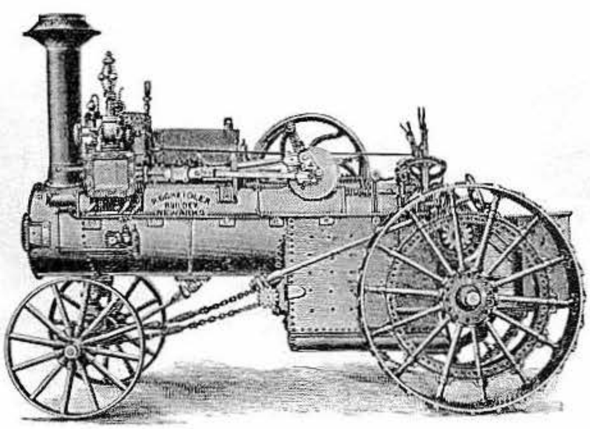


In the late teens, this 18 H.P. Scheidler steam traction engine was built by the Scheidler Co. This engine used the balanced piston valve. During his lifetime, Reinhardt Scheidler held more than 67 patents on improvements in steam engine design and attachments.

Scheidler Machine Works

This is one of the earliest Scheidler engines built, bearing patent dates of 1882. With the decline in the demand for steam agricultural engines, the Scheidler plant became more and more a custom machine shop, building its last few engines around 1925. The principal building of the Scheidler works still stands on the 1st Street, Newark, Ohio, presently occupied by the Electric Wholesale Co.

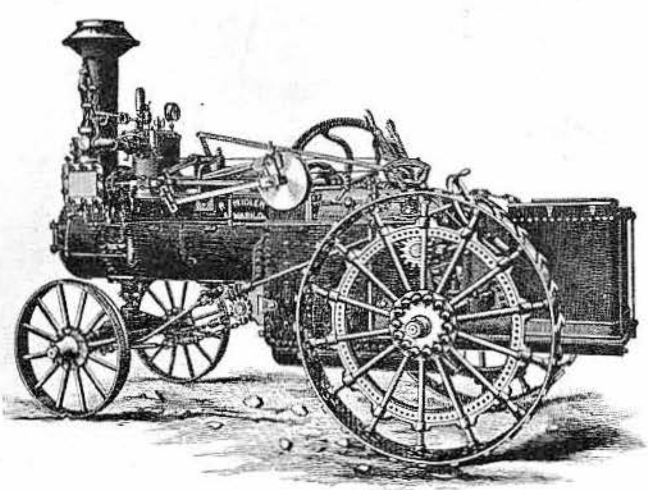


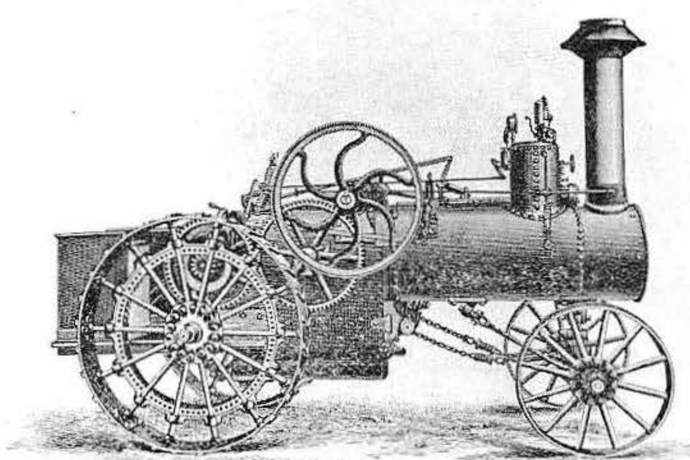


This is the 1903 model 16 H.P. Scheidler steam traction engine. This engine's link rod could be removed for sawing or any other stationary operation. This change could be made in five minutes time, rendering the engine as simple and durable as any portable engine.

Both fuel bunker and water tank were platform mounted on this 1903 model 12 H.P. Scheidler steam traction engine. This engine had a slide valve and plain dome. The right hand tank contained a tool box and the left hand tank was fitted with an engineer's seat.

A 14 H.P. Scheidler steam traction engine was pictured in a 1903 Scheidler Co. catalog. This engine's main drive gear could be thrown in or out by a lever operated from the platform. All the engines were equipped with a Pickering governor and belt, patent Sawyers valve, steam gauge, pop safety valve, brass whistle, gauge cocks, glass water gauge, blow-off valve, cylinder lubricator, self-feeding oil cups, cylinder and drain cocks, a full set of iron wrenches including one combination wrench, flue cleaner, poker, scraper, water tanks, injector and fuel boxes on platform, and an ash pan.





Springfield Engine & Thresher Co.

Oliver Smith Kelly who organized the Springfield Engine & Thresher Co., was also president of the O. S. Kelly Mfg. Co., of Springfield, Ohio, and was connected with the O. S. Kelly Western Mfg. Co., of Iowa City, Iowa.

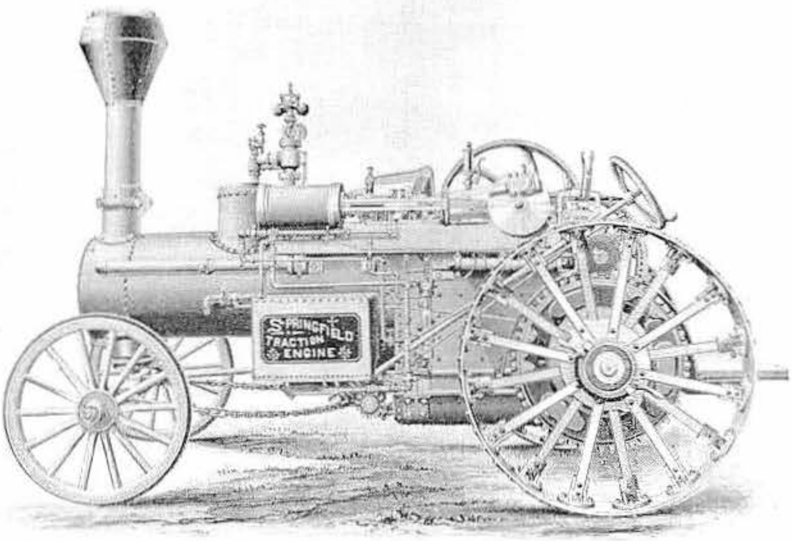
O. S. Kelly was born in 1824 and was an orphan at the age of one year. At the age of 14, he began making his own living on the farm. At the age of 17, he served one year as apprentice at the carpenter trade and a year later began work as a contractor. In 1857, he became a member of the firm of Whitley, Faseler & Kelly, manufacturing mowers and reapers. O. S. Kelly became identified with the thresher business in 1882. The old thresher factory of Rinehart, Ballard and Co. was acquired by O. S. Kelly and was organized under the name of Springfield Engine & Thresher Co., of Springfield, Ohio, and later as the O. S. Kelly Co.

The Springfield steam traction engine used a strong steel shank shaft. A cross-head pump was used to feed the boiler when the engine was running, while an independent pump was used to feed the boiler when the engine was standing still. But, both pumps could be used at the same time. When on the road, both pumps could be operated by the engineer, who need not get off the platform or stop the engine.

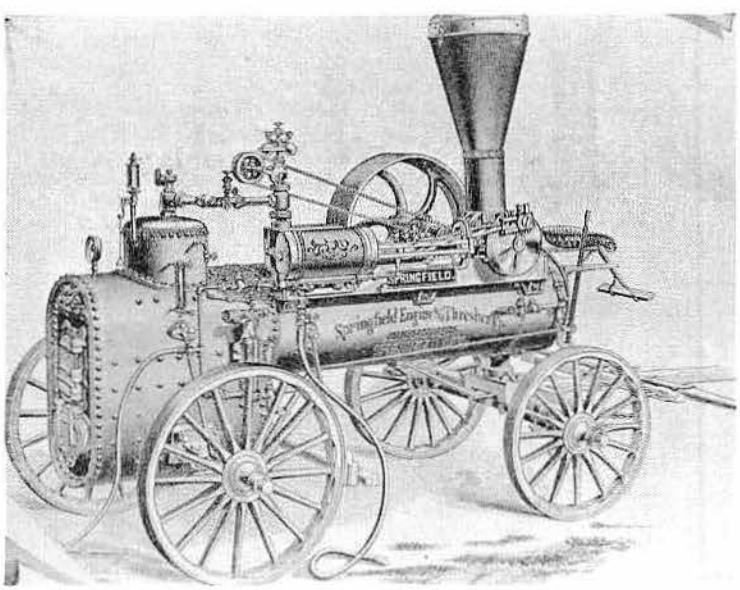
The engine had two water tanks, one on each side of the boiler near the center. These tanks rested on and were bolted to the main frames of the traction engine. These tanks would hold about 75 gallons of water. The engine had a very powerful brake, and when necessary, could be stopped in an instant with a full head of steam.

Every boiler was tested with a hydraulic pressure of 150 lbs. to the square inch, and both the engine and the boiler were fired up with a high steam pressure and put in actual operation before the engine left the factory. Every part was also carefully inspected so that it was ready for work when the purchaser received it.

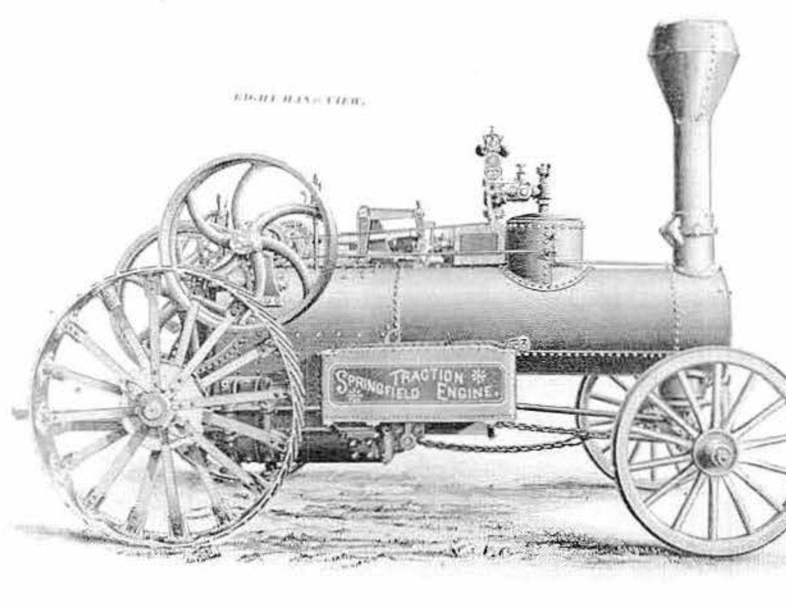
The Springfield Engine & Thresher Co. made the following: Steam traction engines of single cylinder; portable steam engines; steam engines on skids; Springfield Vibrating separator; Kelly horsepowers, and the swinging stacker.



A 10 H.P. Springfield steam traction engine was pictured in an 1885 Springfield Co. catalog. This engine was made by Springfield Engine & Thresher Co. of Springfield, Ohio. It had a cross-head pump, which was used to feed the boiler when the engine was running. The independent pump was used to feed the boiler when the engine was standing still, but both pumps could be used at the same time. When on the road, both pumps could be operated by the engineer who did not have to get off the platform or stop the engine. It used two water tanks, one on each side of the boiler. These tanks rested on and were bolted to the main frames. The tanks held 75 gallons or 2-$^3/_8$ barrels of water and were made very substantial.



The Springfield steam portable engine was built in 1885 by Springfield Engine & Thresher Co. of Springfield, Ohio. These engines were built 6, 8, 10, 12 and 20 H.P. sizes. This engine's boiler was made of the best charcoal hammered iron for shell, and the best flange iron for the heads.



This is the flywheel side of the 10 H.P. Springfield steam traction engine built in 1885. Oliver Smith Kelly organized the Springfield Engine & Thresher Co., was president of the O.S. Kelly Mfg. Co. of Springfield, Ohio, and was connected with the O.S. Kelly Western Mfg. Co. of Iowa City, Iowa.

A.W. Stevens Co.

The manufacture of the celebrated Stevens Threshing Machines and horsepowers was begun in 1842, at Genoa, New York, by A. W. Stevens.

In January, 1878, the old shops at Genoa, were destroyed by fire. New ones were immediately erected for temporary use during the following season, and, notwithstanding the heavy loss, the business was continued without interruption. In October of that year the entire works were removed from Genoa to Auburn, N.Y.

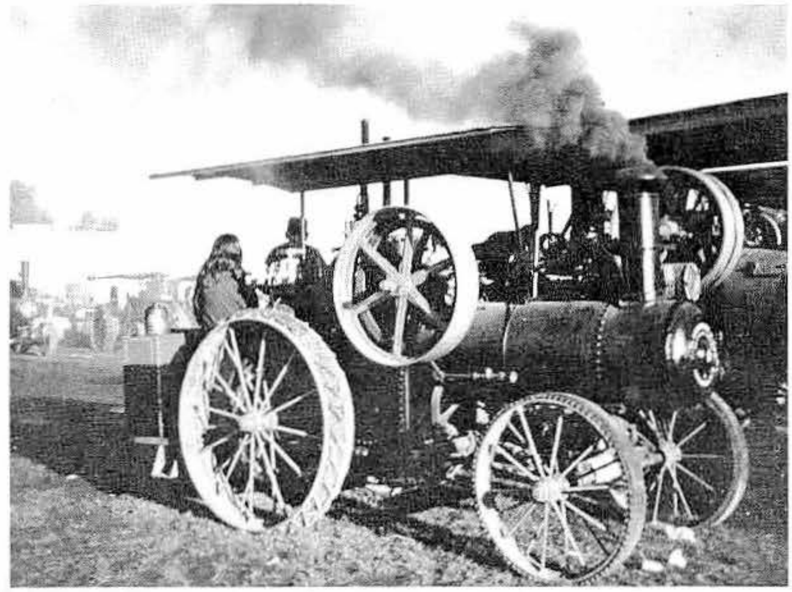
The A. W. Stevens & Son Co., then moved to Marinette, Wisc., and changed the name to A. W. Stevens Co., in 1898.

The A. W. Stevens steam traction engine boiler was of the loco motive pattern type. The shell was made of the best open hearth homogeneous boiler plate steel, 600,000 pounds tensile strength; thoroughly braced and stayed. It was an easy steamer; was amply provided with handholes and plugs for cleaning; and had a long smoke box and a large heating surface. The engine had a high offset over firebox, that doubled the steam space, furnishing hot, dry steam at all times. A large size steam pipe passed through the hottest part of boiler, super-heating the steam and conducting it to the cylinder without any condensation or loss of power. This gave full steam expansion, great economy in fuel and water, and an unfailing reserve force for use in emergencies. The boilers were trimmed with the highest grade valves and fittings, and had fusible plugs in the crown sheet.

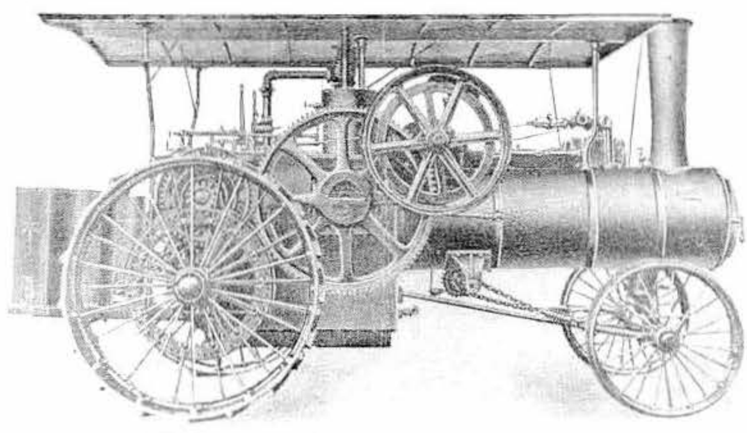
The rocking grates were of great advantage. These lasted longer than others, were more easily kept clean, and required very little attention. There was no necessity for keeping the fire door open to poke the fire, as the fire could be gently shaken, by means of a hand lever, thereby keeping out the cold air from the flues. The patented single eccentric reverse, they said, had fewer parts than any other make. The piston used expansion rings.

Regular equipment that came with A. W. Stevens steam traction engines included, a Lunkenheimer throttle, Pickering horizontal governor, one right hand automatic injector, one left hand positive injector, one ejector for filling the platform tanks, suction and discharge hose, Kunkle pop valve, Ashcroft steam gauge, chime or straight bell whistle, Mason-Kipp oil pump, high grade valves, water gauge, gauge cocks, cylinder cocks, check valves, full supply of oilers, grease cups and wrenches.

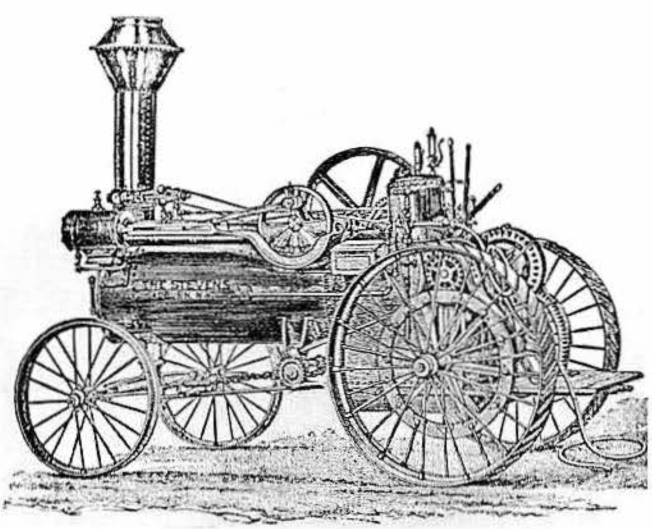
The A. W. Stevens Co., made the following: Steam traction engines of single cylinder; water wagons; the New Stevens threshers, and the Monarch tender.



Wearing "street shoes" or rubber tires is this A. W. Stevens & Son 9 H.P. steam traction engine, built by the A.W. Stevens & Son Co. of Auburn, N.Y., in 1890. This engine is owned by Ira Prickett of Mount Pleasant, Iowa. It is busy smoking up the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant.

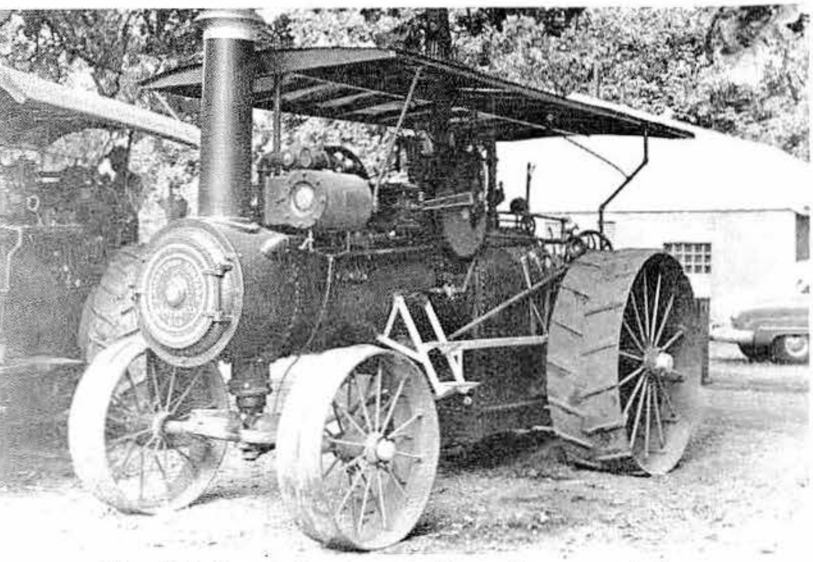


A tremendous bullgear was used on this A.W. Stevens steam traction engine made by A.W. Stevens Co., Marinette, Wis., in 1906. This engine's boiler was of the locomotive type. The shell was made of the best open hearth homogeneous boiler plate steel, 60,000 pounds tensile strength; thoroughly braced and stayed. It was an easy steamer; was amply provided with handholes and plugs for cleaning; had a long smoke box and a large heating surface and furnishing hot, dry steam at all times. It had a large size steam pipe passing through the hottest part of boiler, super heating the steam and conducting it to the cylinder without any condensation or loss of power, giving full steam expansion and consequently great economy in fuel and water. The boilers were trimmed with the highest grade valve and fittings. It had fusible plugs in the crown sheet.

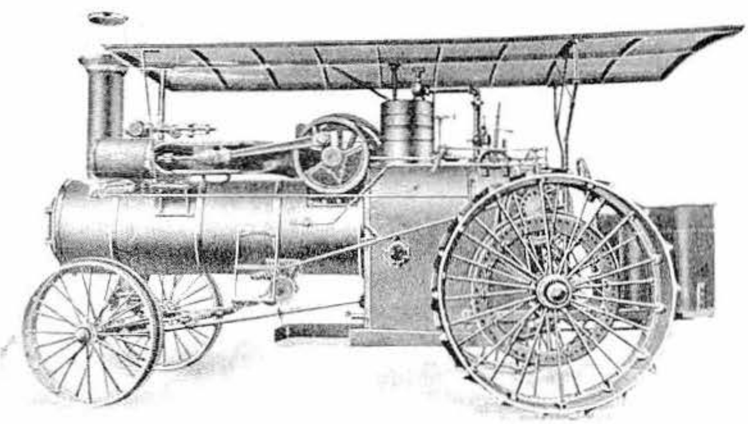


This A.W. Stevens & Son steam traction engine was built by A.W. Stevens & Son Co. of Auburn, N.Y., in 1891. The manufacture of the celebrated Stevens Threshing Machines and horse powers was begun in 1842 at Genoa, N.Y., by A.W. Stevens.

A.W. Stevens Co.

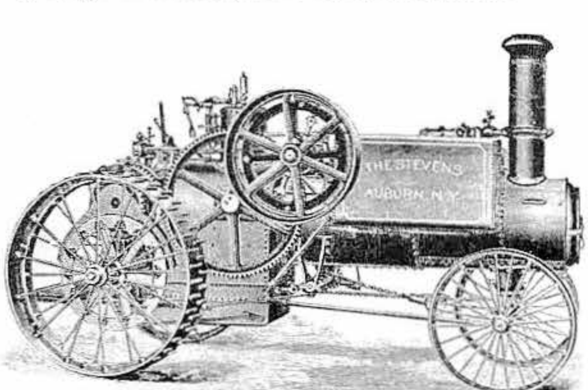


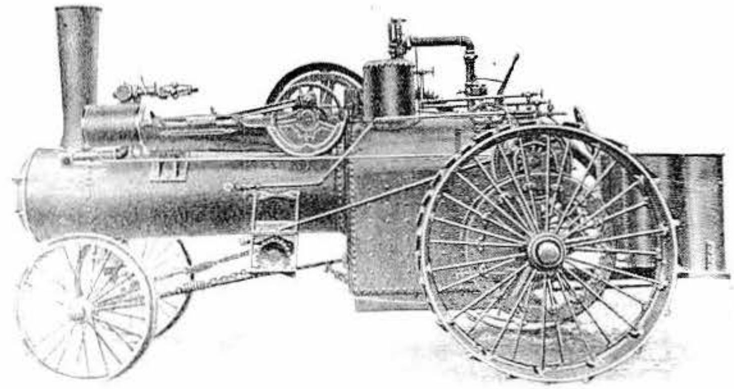
This A.W. Stevens Co. steam traction engine was made in Marinette, Wis. The A.W. Stevens & Son Co. moved to Marinette in 1898 and changed the name to A.W. Stevens Co.



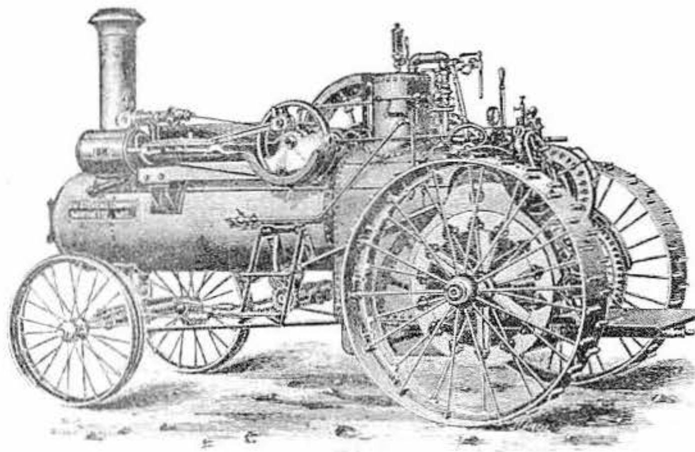
Largest of the 1906 models was the A. W. Stevens 22 H.P. steam traction engine. This engine is complete with jacket and cab. All A. W. Stevens engines were equipped with Lunkenheimer throttle; Pickering horizontal governor; one right hand automatic injector; one left hand positive injector; one ejector for filling the platform tanks; suction and discharge hoses; Kunkle pop valve; Ashcroft steam gauge; chime or straight bell whistle; Mason-Kipp oil pump; high grade valves; water gauge; gauge cocks; cylinder cocks; check valves; full supply of oilers; grease cups, and wrenches.

One of the earliest engines built by A. W. Stevens was this steam traction engine. Going uphill or coming down, the Stevens was safe and reliable. It had a powerful foot brake on the platform, strong enough to hold the engine and its load on any incline.



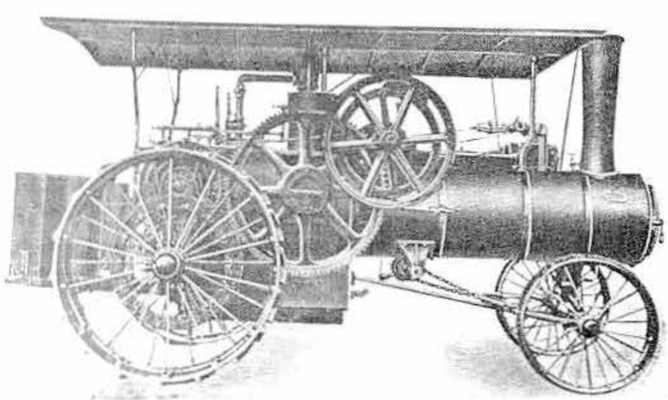


This is the crank side of an A. W. Stevens steam traction engine made in 1906. The engines were made in 12; 16; 18; 20 and 22 H.P. sizes in 1906. This engine's crank head was thoroughly balanced, making the engine run still and smooth. The crankshaft was very heavy and ran in wide, heavy pillow block bearings. It was easily adjusted to take up wear and could not get out of line.



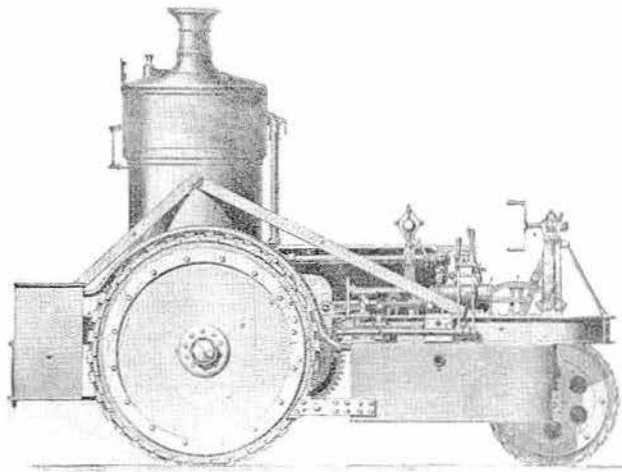
A. W. Stevens built this steam traction engine in 1900. Stevens made single cylinder steam traction engines, water wagons, the New Stevens threshers, and the Monarch tender.

Virtually unchanged from 1906 was the 1908 A. W. Stevens steam traction engine. This engine has jacket and cab. The two water tanks on the platform had a combined capacity of 74 gallons. They were filled by an ejector within easy reach of the engineer, and were provided with plugs and hand holes for cleaning as well as with drain cocks for draining. The front end of the boiler was supported by a double coil spring enclosed in a housing. These springs overcame the jarring and jolting on rough roads. They could be locked by means of a lever to prevent the front end from springing while the engine was driving a thresher or other machinery.



Thompson

The Thompson rubber-tired steam traction engine was manu- actured by D. D. Williamson of New York. Williamson had the J. S. and Canada as his territory and had Grant's Locomotive Vorks at Paterson, N.J., built the machine. Some 50 were build, nd sold in the U. S. The Georgia, Louisiana, California, and outh Carolina State Fairs were used as demonstration areas, and he engines won first prize awards at the California and St. Louis lowing contests in 1871.



This strange thing was a Thomson steam traction engine built by D. D. Williamson of New York City. R. W. Thomson, the Scot who invented the air tire, forgot "free air" when he began putting rubber on steam traction engines late in the 1860s. D. D. Williamson got the right to build the engines in the U. S. and Canada. He showed and sold some 50 of them over the U. S., including California and Utah. This illustration appeared in an 1871 issue of Southern Farm & Home magazine.

Twentieth Century Mfg. Co.

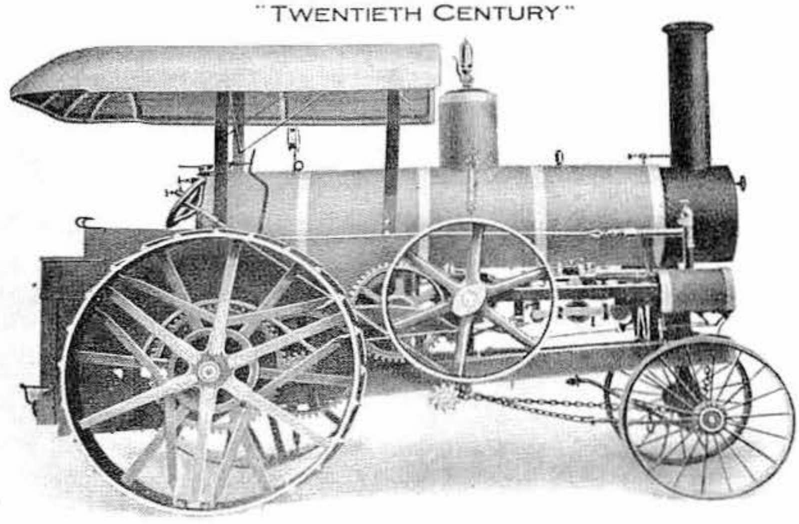
The Twentieth Century steam traction engines were designed nd built by a Mennonite minister, the Rev. Miller of Boynton, Pa. The company was first called the Improved Traction Engine Co., the name was later changed to the Twentieth Century Mfg. Co. Rev. Miller's engine was known as the 20th Century. The ompany built one of the strongest, lightest, most economical, nost durable, best designed and constructed double-cylinder en- ine on the market, so they said. The double-cylinder steam trac- ion engine had all the advantages over a single-cylinder traction ngine that a double-cylinder railroad locomotive had over a ingle-cylinder railroad locomotive. The double-cylinder engine ad no dead center, and would start when the throttle was pened. Not so with the single-cylinder engine. The company said hat its engines were simple and did not require any more care han a single-cylinder engine.

All of the steam traction engines were built with steel gearing hroughout. Steel gearing, it was claimed would wear five times as ong as cast iron. The engines used the Miller patented boilers. The frame on which the engine and all machinery was mounted vas of steel "I" beams.

The drivers were built with crucible steel hubs, solid steel pokes and boiler plate rims. The axles were made of steel, with a ong bearing in the wheels. The reverse was simple and durable, sing only one eccentric to each cylinder.

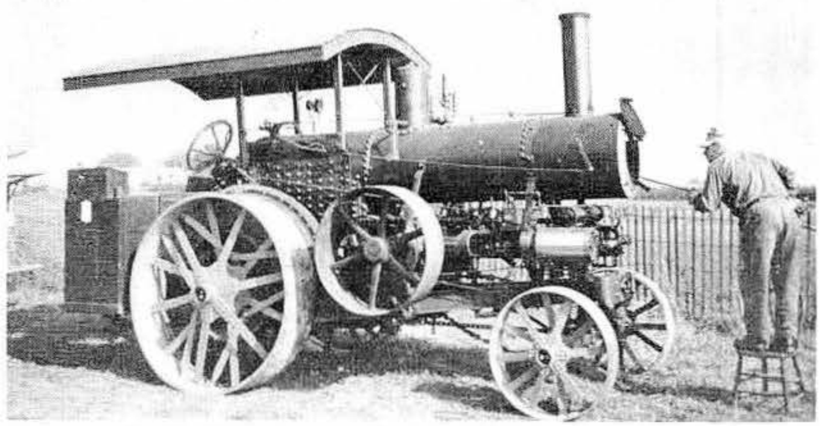
The valve was balanced by means of a wedge on the bank and qualizing holes through the valve, lengthwise. It was adjusted rom the outside of the steam chest lid. The engines were built vith one or two fly wheels as desired. On the single fly wheel en- ines, there was one center crank and one disc crank. On the louble fly wheel engine—one on each side—the crank shaft was nade from a solid machine steel forging with bells set at right ngles. This was called a Double Throw Center Crank Shaft. It ested in a crank hanger with four bearing. Two of the bearings vere 8 ½-inches, and two were 4 ½-inches. One bearing was on ach side of each ball, with the fly wheels just outside the bearings, making this the most substantial shaft on any engine manufactured. The shaft was 2 ¾-inches in diameter, with all corners turned round.

The water tank was a large size for the engine. It was placed on the left side between the boiler and the drive wheel. The platform was simply an extension of the "I" beams of the frame. The gearings were all attached to the frame of the engine, and not to any



A 16 and 20 H.P. Twentieth Century double cylinder steam traction engine was built by Twentieth Century Mfg. Co. of Boynton, Pa. in 1907. This company built nothing but double cylinder steam traction engines. The double cylinder steam traction engine had all the advantages over a single cylinder engine that a double cylinder railroad locomotive had over a single cylinder railroad locomotive. This engine had no dead center, and would start when the throttle was opened. Not so with the single cylinder engine. The engines were simple, and did not require any more care than a single cylinder engine.

Twentieth Centur

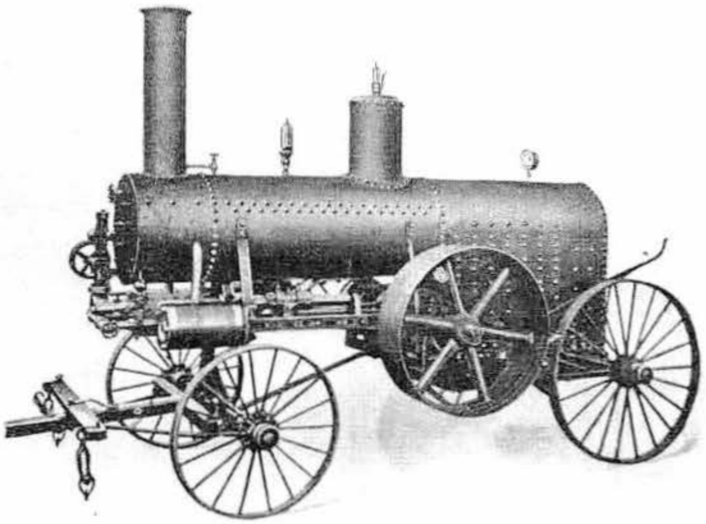


Cleaning time arrives again for this 16 H.P. Twentieth Century steam traction engine built in 1916. This engine is owned by C. Archie Glenn of Plain Grove, Pa. It appears at the Northwestern Pennsylvania Steam Engine and Old Equipment Assn.

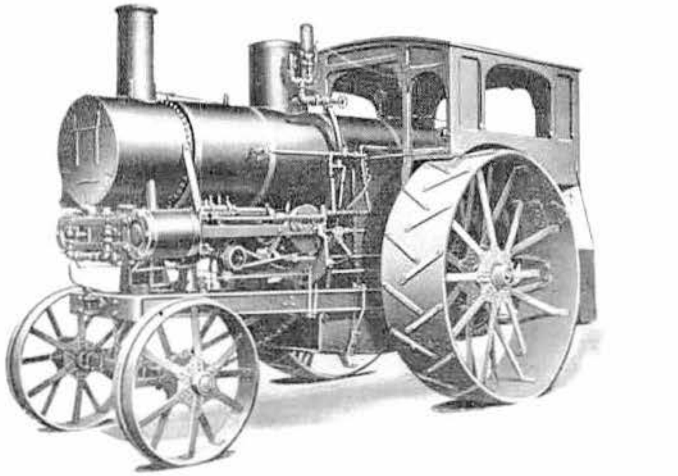
brackets from the boiler.

The front carriage was a very important feature on an under mounted engine of this type. The carriage was placed under th boiler, giving an advantage in making short turns. There wa plenty of room to swing the carriage, as either front wheel coul raise thirty inches without coming in contact with the frame. Thi was accomplished by means of a King Post and Yoke. The fron end of all the traction engines was spring-mounted. The engin was basically built on the principle of a railroad locomotive.

The Twentieth Century Mfg. Co. made the following: th double-cylinder under-mounted steam traction engine, and a fe portables.



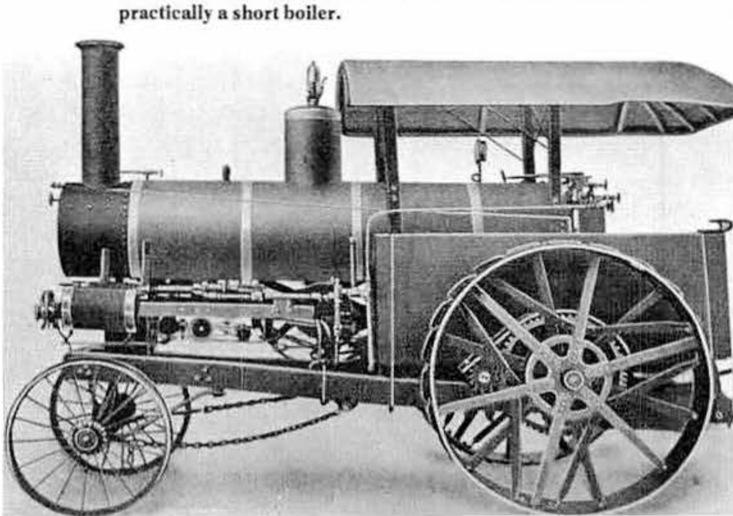
The Twentieth Century steam portable engine was built in 1907 by the Twentieth Century Mfg. Co. of Boynton, Pa. All the portable engines of 16 H.P. that were mounted on wheels were first mounted on steel frames or "I" beams, the same as the traction engines. The steel frames were then mounted on the wheels. The company also mounted the engines on skids. The engines used the Miller patent boiler.



Appearing to be a railroad locomotive looking for its tracks is this 1907 model 35 H.P. Twentieth Century steam traction engine. This engine used an axle made of steel. It had a long bearing in the wheels. This bearing was 15 inches in length, and was oiled from a cavity within. It used a revolving axle on spring-mounted engines. When revolving axles were used, the company placed the bearing on the "I" beams of the frames. The valve was balanced by means of a wedge on the back and equalizing holes through side of the steam chest lid. The water tank was large for the size of the engine.

This is a later picture of the restored 16 H.P. Twentieth Century steam traction engine owned by C. Archie Glenn of Plain Grove, Pa. This engine is believed to be the only complete Twentieth Century engine surviving in operating condition today. The late Rev. Elmer Ritzman of Enola, Pa., at one time owned this engine. The engine has had many owners. Archie Glenn remembers this engine and others that threshed on his father's farm many years ago.

This is the left side of the 1907 Model 16 and 20 horse power Twentieth Century double cylinder steam traction engine. This engine used the Miller patent boiler. The dome was centrally located, and large enough to furnish plenty of dry steam for all needed purposes. Hand hole plates were located in front, below the tubes; in the rear, above the water line, and two plugs and two valves were in opposite corners of the firebox, thus amply providing for the cleaning out of the boiler. The firebox was of special construction, the tubes extending over the crown sheet that was arched, thereby giving long tubes, a long firebox, and practically a short boiler.



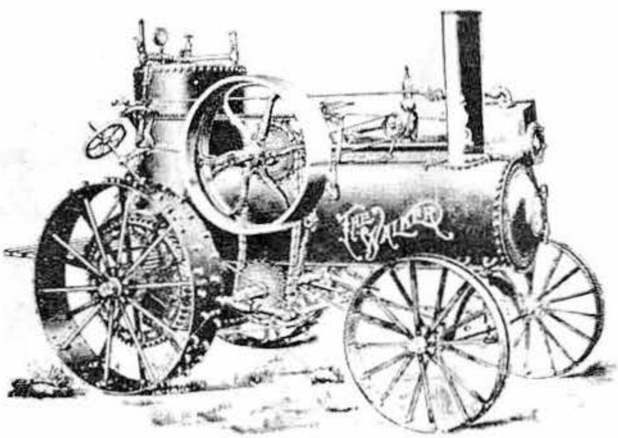
Union Iron Works

Starting in 1880 the Union Iron Works began the strangest era of engine building in Newark's already unique history. Actually the principal business of the firm was the building of traction attachments for portable or "plain" engines as they were called.

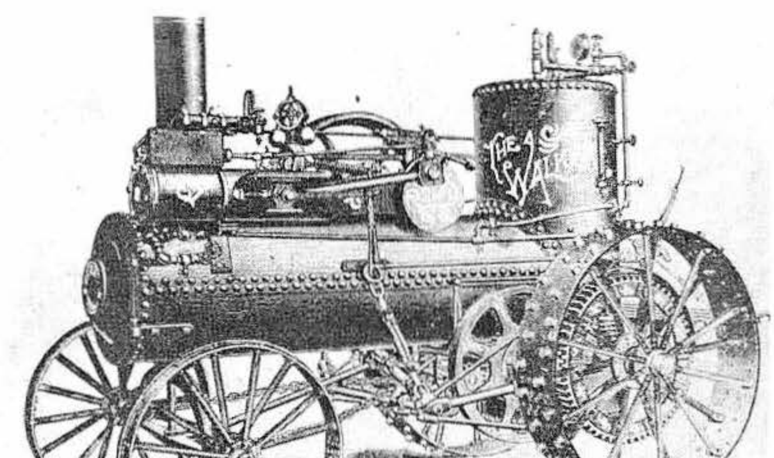
The first speed reduction from the engine's main shaft was by V-belt - after the manner of the Westinghouse traction. After a good soaking in engine oil together with the heat of the boiler on that leather could cause quite a scene when a belt broke. Some of those conversions set new speed records for engines in the Licking County hills.

Nevertheless, the Union Iron Works extended the usefulness of many portable engines, reduced the need for many horses and oxen in moving a rig, and did a thriving business for more than 20 years.

The Union Iron Works continued to serve Newark as a machine and boiler repair shop until the early 1900's when the building was sold for other use. The Company's president was James H. Smith and the superintendent was Henry D. Smith.



The Walker steam traction engine was built by the Union Iron Works of Newark, Ohio, in 1892. This engine had two traction gear speeds, an 8 x 10-inch cylinder, and an unusual modified locomotive boiler, having an enlarged and tubed dome in the boiler wagon top above the firebox. This engine was in service in and around Newark until sometime after 1900.



This is the cylinder side of the Walker steam traction engine built by the Union Iron Works of Newark, Ohio. The Union Iron Works had as its principal business the building of traction attachments for portable or plain engines, as they were called. They continued in this business from 1880 to 1894. In 1891 a Canadian inventor by the name of Walker designed for Union Iron Works a complete steam traction engine, and while only two such engines were built, they proved to be good machines.

Upton Mfg. Co.

The first thresher shop in Michigan was started by William Brown in 1851 at Battle Creek. The firm Upton, Brown & Co. succeeded Wm. Brown in 1859. The corporation Upton Manufacturing Co. succeeded Upton, Brown & Co. in 1874.

James Upton established the James Upton & Co. in 1861. The company was well-known in early Battle Creek for various achievements, including the manufacture of the Michigan Sweepstakes threshing machines. Soon afterward, the company became the Upton Brown Co., and merged into a stock company known simply as the Upton Manufacturing Co.

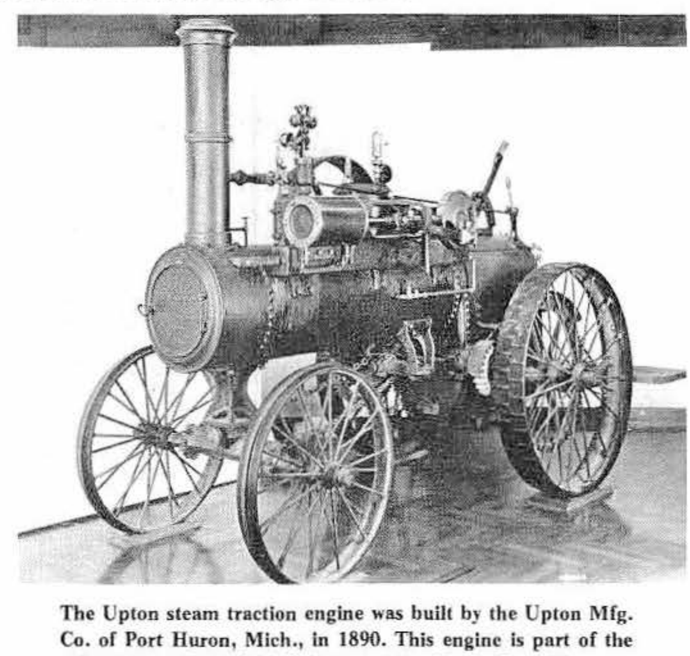
Partners in the Upton-Brown Co., besides J. S. Upton, were his brother Parley, William Brown and William Brooks.

The newer section of the building was erected in 1868 as an addition to the original factory and was used as a woodworking department.

At the time the Upton Manufacturing Co. was formed it was capitalized at $100,000. Mr. Upton was president and Henry M. Strong, later his son-in-law, was secretary-treasurer. The firm employed 75 men at that time. The company's product was being used throughout the wheat-producing states of Illinois, Iowa, Minnesota and Missouri. Later, in addition to the Michigan Sweepstakes thresher, the factory made a combination thresher, forerunner of the present combine—which Mr. Upton patented in 1877.

The Upton-Port Huron traction engine was first made and sold in 1882. It was original in several important respects, and it earned a high reputation. Arrangements for removal of the business from Battle Creek to Port Huron were made in 1884. Return flue boiler traction engines were built at Port Huron as early as 1886.

The name Port Huron Engine & Thresher Co. was adopted, by amending the company's by-laws, in the fall of 1890. Port Huron Rusher threshers, and Port Huron traction engines, were introduced in 1891, and made good records.



The Upton steam traction engine was built by the Upton Mfg. Co. of Port Huron, Mich., in 1890. This engine is part of the collection of Greenfield Village and the Henry Ford Museum, Dearborn, Mich. The valve used in this engine is operated by a gear-drive crank. James Upton established the James Upton & Co. in 1861.

Waterloo Mfg. Co.

Jacob Bricker was born in 1818 in Waterloo, Ontario, and learned the trade of blacksmith and wagonmaker in a neighboring village. Returning to Waterloo in 1850, he built a shop and began the manufacture of pioneer tools and implements. Gradually his shop and his output included threshing machines.

Bricker's machines were of the canvas or apron type and his idea of mounting them on two wheels made them quite popular. The demand soon caused him to concentrate solely on threshing machines, tread mills and horsepowers. In the early 1880s he began to experiment with steam power, and equipped his plant to build portable steam engines of the return flue type.

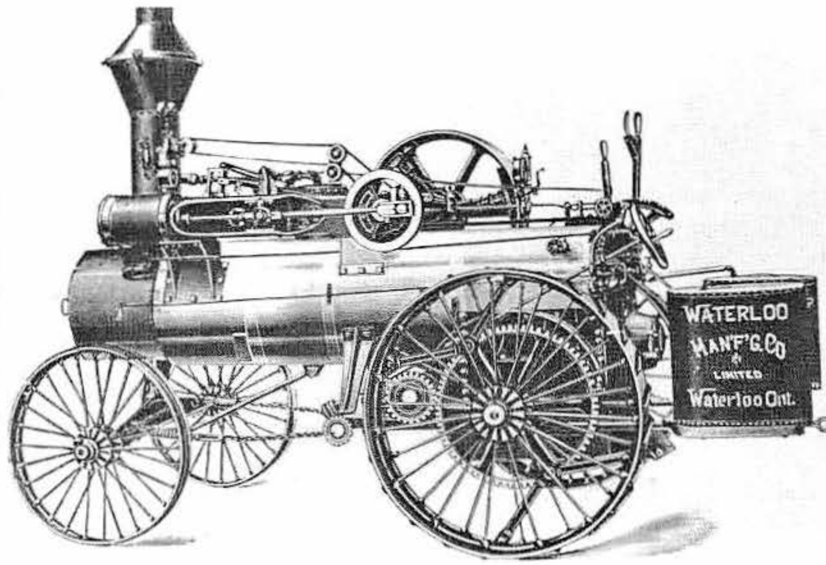
In 1888, E. W. B Snider, who had been born in the nearby village of St. Jacobs and became a well-to-do miller, saw the possibilities of the fast growing threshing machine industry. He purchased the plant operated by Jacob Bricker and the close-by foundry where Samuel Mermer had him making plows and other agricultural implements. Combining the two under the name of Waterloo Manufacturing Company, he began the almost exclusive manufacture of threshing machinery which he marketed under the trademark "Lion Brand." The face of a lion was cast on the smoke box door of all engines built after the turn of the century.

For a few years the new firm continued to build return flue portable engines, but public interest in the locomotive type of boiler soon caused a switch to this style. The open bottom firebox type was chosen, the popular diamond top smokestack was adopted, and the belt wheel was moved over to the right side. About this time workmen, experienced in building traction engines, were secured as a result of the closing down of the Haggard Bros. Foundry at Brampton, Ontario. Thus, the production of traction engines was commenced at Waterloo without delay.

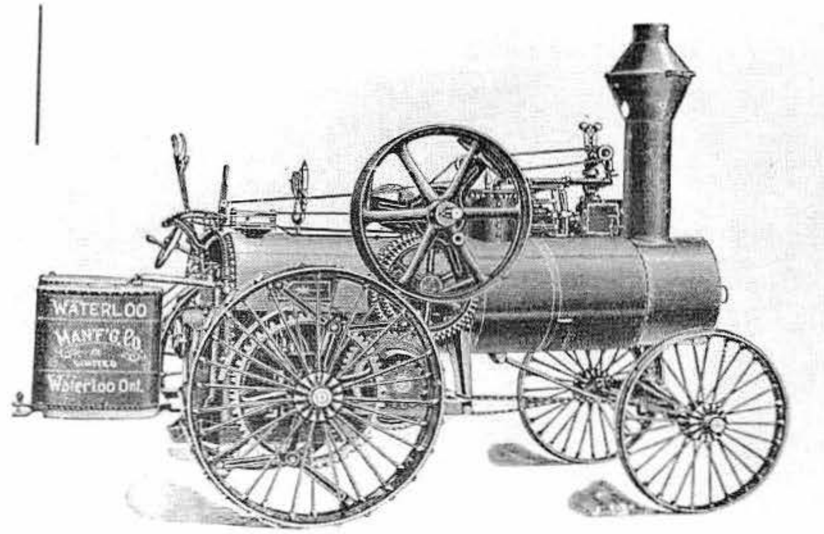
These early traction engines were rated at 14 H.P. They were sidemounted, with the boiler resting on springs and the counter shaft mounted on a strong angle steel frame extending around the front of the firebox from one rear wheel bracket to the other. The engines were of the side crank type mounted with the cylinder at the smokebox end.

In 1925 the last new steam traction engine was built, and three years later the Snider family, which had controlled the fortunes of the firm for 40 years, sold out their interest to the H. V. McKay Company of Australia, who chose Waterloo, Ontario, as the place to manufacture and distribute its self-propelled combines on this continent.

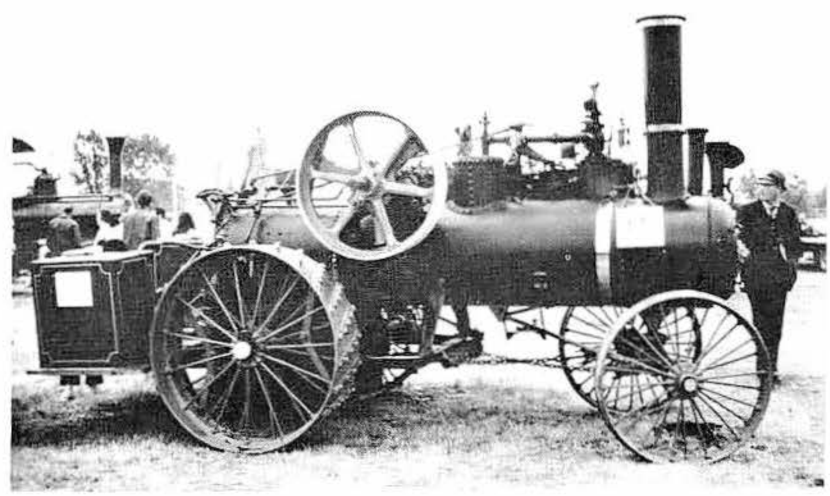
The new owners continued to operate as the Waterloo Manufacturing Company Limited but the depression years forced them to abandon the manufacture of combines. Some construction machinery and various agricultural implements, including garden and orchard power cultivators, are now produced. Separators in the smaller sizes were made unit a few years ago but the firm now acts as Canadian distributors of the U. S. built "Belle City" threshers and Minneapolis-Moline farm tractors.



Built in 1910 was this 14 H.P. Waterloo steam traction engine. This engine is using the locomotive boiler. It ran with a steam pressure of about 165 PSI at 240 RPM speed.

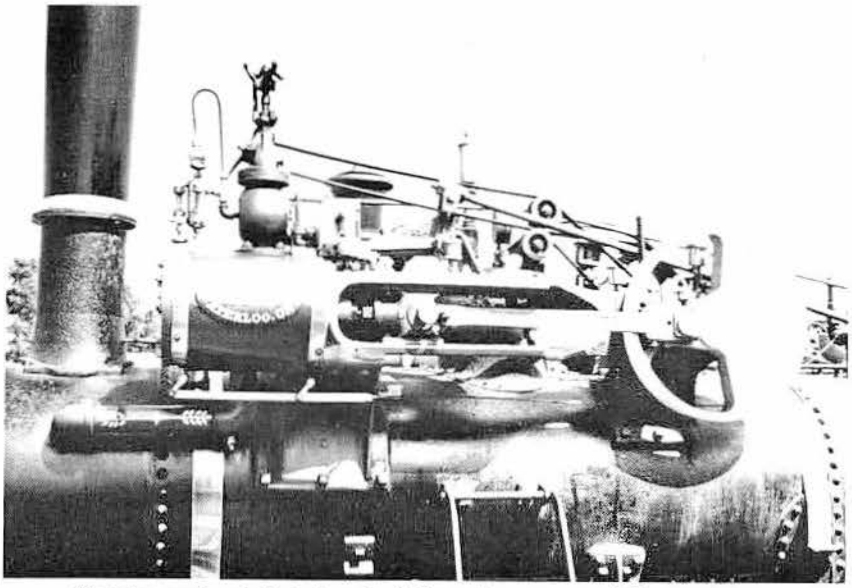


This is the flywheel side of a 1910 model 14 H.P. Waterloo steam traction engine. This engine's flues were 2 inches in diameter. The diameter of the flywheel was 40 inches, and the diameter of the front wheels was 43 inches.

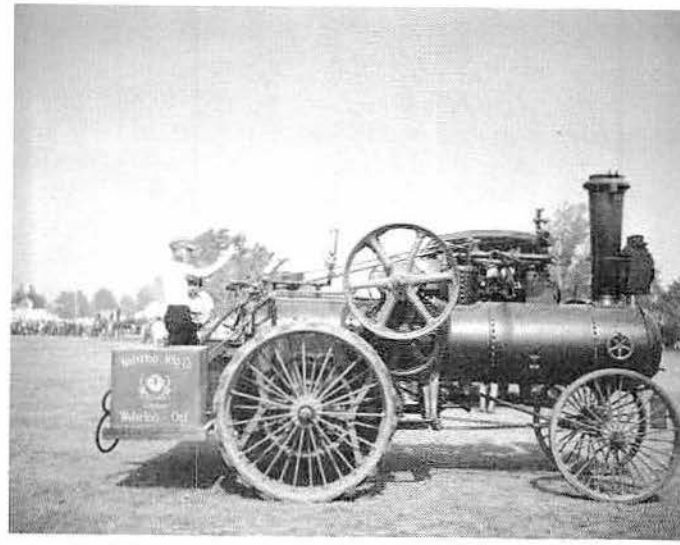


A 16 H.P. Waterloo steam traction engine, built by the Waterloo Mfg. Co. Ltd. of Waterloo, Ontario, in 1892. This engine is owned by John Grant of Woodstock, Ontario, and is in action at the Ontario Steam & Antique Preservers Assn. show at Milton, Ontario.

Waterloo Mfg. Co.

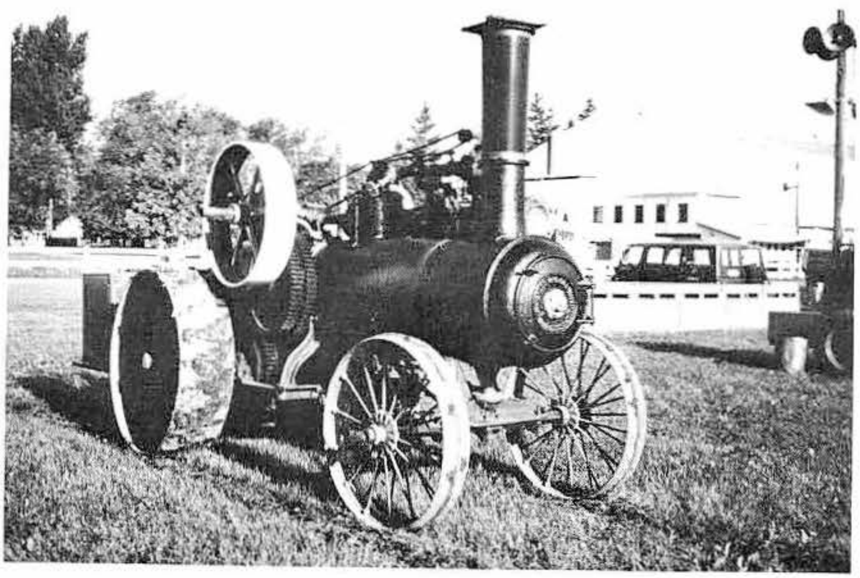


Waterloo used a nicely designed cylinder and governor on their 16 H.P. engines, with the design seemingly ahead of its time—considering that this engine was built in 1892. Sight feed oilers are provided for the governor and valve linkage. This was considered a front-mounted, center crank engine. It is owned by John Grant of Woodstock, Ontario.

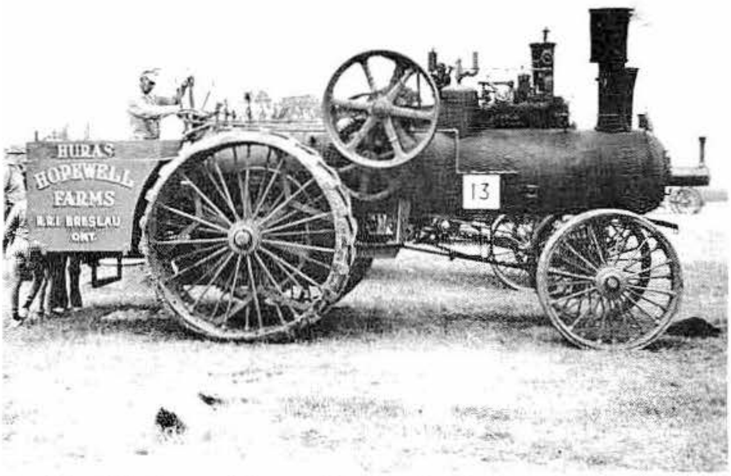


Participating at the Ontario Steam & Antique Preservers show at Milton, Ontario, is this 18 H.P. Waterloo steam traction engine. It was built in 1908. The engine, owned by Bruce Buckle of Greensville, Ontario, has been fitted with rubber tires so that it can be driven on paved streets. Waterloo used platform tanks and bunkers on almost all of its engines.

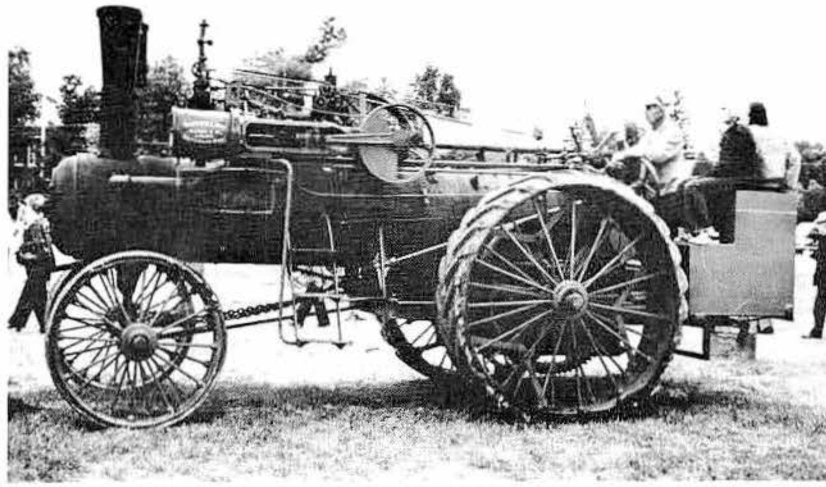
A smiling lion's head dominated the cast iron smokebox door on the Waterloo steam traction engines. Waterloo used the lion trademark for years. This is the front end of John Grant's 16 H.P. engine, built in 1892.



Huge bull gears occupy the space between the boiler and the fly-wheel on John Grant's 1892 model Waterloo engine. The water tanks and fuel bunker are platform mounted. Substantial frame and platform bracing was used on these engines. One of the cast iron frame braces can be seen just ahead of and below the large gears.

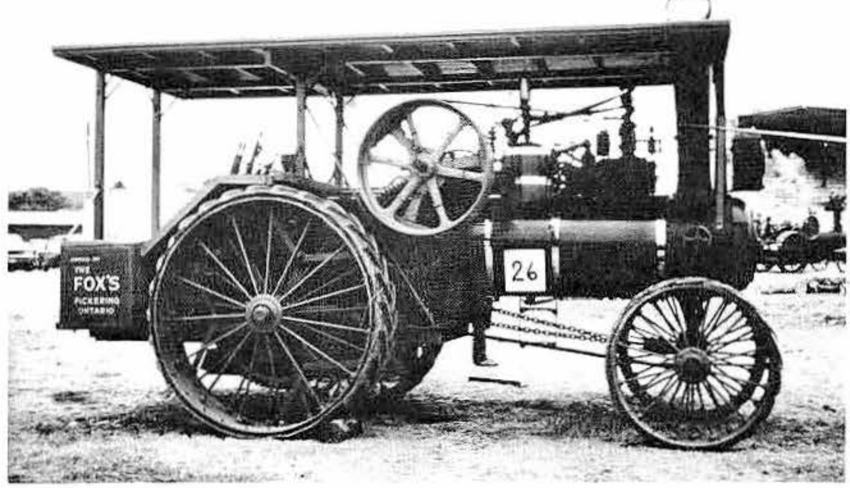


Advertising Hopewell Farms of Breslau, Ontario, is this 20 H.P. Waterloo steam traction engine built in 1918. This engine is owned by Ed Huras of Waterloo, Ontario. It is participating at the Ontario Steam & Antique Preservers Assn. show at Milton, Ontario.

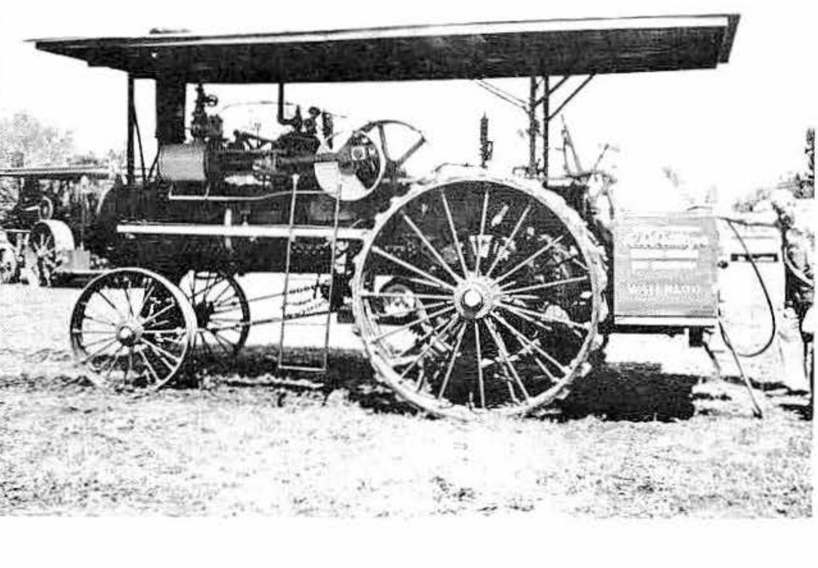


This is the cylinder side of the 20 H.P. steam traction engine owned by Ed Huras of Waterloo, Ontario. This engine has been fitted with rubber tires.

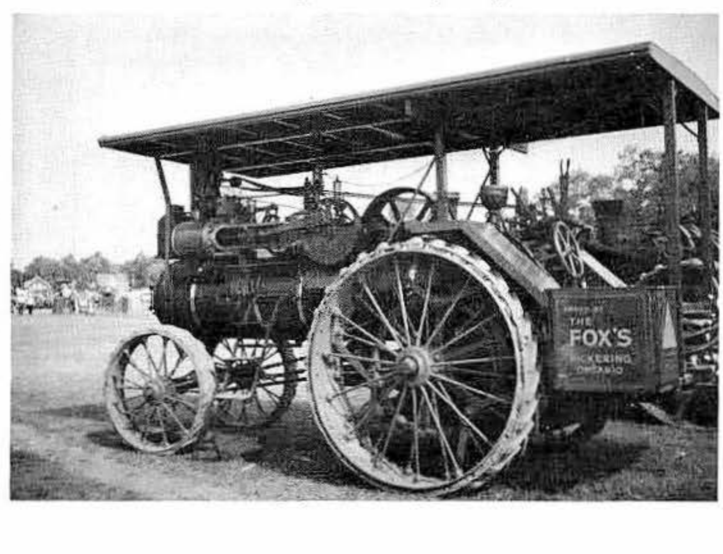
This 20 H.P. Waterloo steam traction engine, built in 1926, is owned by Bill Fox of Pickering, Ontario. It is at the Ontario Steam & Antique Preservers Assn. show at Milton, Ontario.



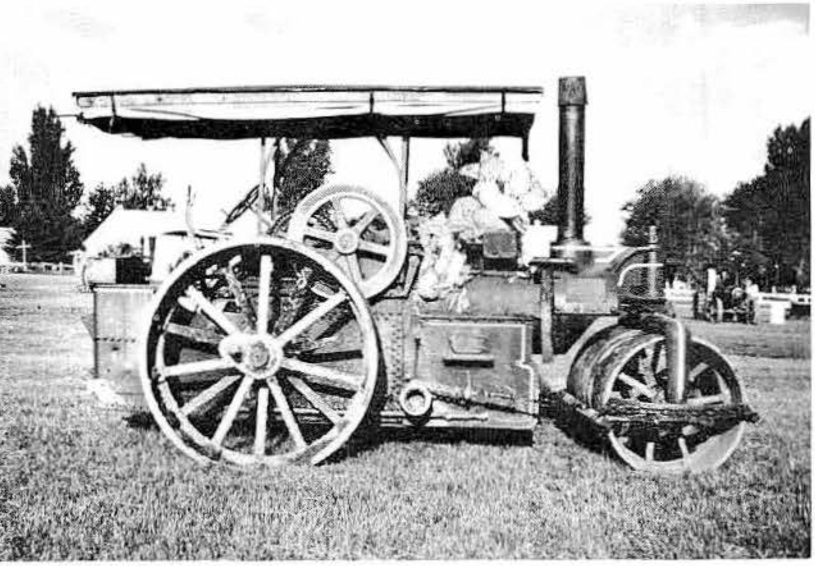
Quenching its thirst before another demonstration run is this 22 H.P. Waterloo steam traction engine built in 1925. This engine is owned by R. D. Pettinger of Courtland, Ontario, and is participating in the Norwich and District Historical Society Show at Norwich, Ontario. In 1925, the last new steam traction engine was built by Waterloo. Three years later the Snider family, which had controlled the fortunes of the firm for 40 years, sold out their interest to the H. V. McKay Co. of Australia, which chose Waterloo, Ontario, as the place to manufacture and distribute their self-propelled combines on this continent.



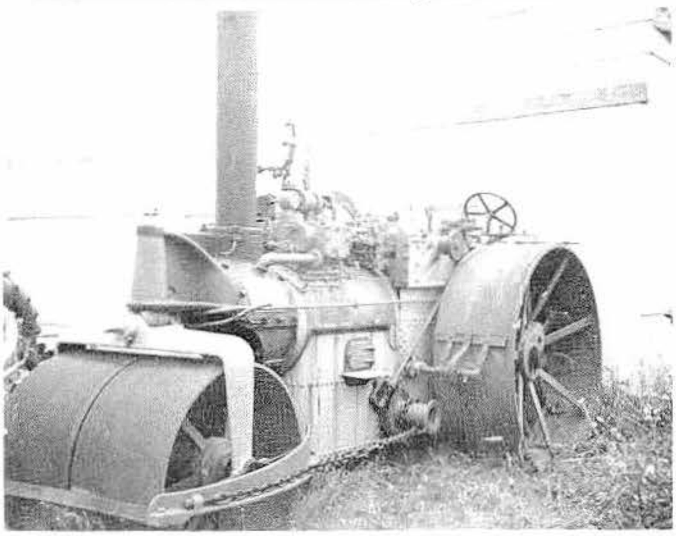
This is a rear quarter view of the 20 H.P. Waterloo steam traction engine, built in 1926, and owned by Bill Fox. Apparently this engine is used on the road today, as it is fitted with rubber tires and the "slow moving vehicle" safety triangle.



Waterous Co.



William Chambergain of Clear Creek, Ontario, is the owner of this 16 H.P. Waterous steam roller built in 1912. It is parked at the Norwich and District Historical Society at Norwich, Ontario. Its governor and valve gear have been wrapped for protection from the weather. This roller is equipped with full canopy cab and full side curtains for complete protection when operating in inclement weather. This roller is a double cylinder model.



This 15 H.P. Waterous steam roller, built in 1912, is owned by Watson Armstrong of Teeswater, Ontario. Built in Brantford, Ontario, under the Waterous patent in 1912, it is engine No. B6222 double cylinder. It was railroaded to Toronto, and started rolling Younge Street, North to Route 11 highway and on to Orillia. Then it went to Timmins and worked until 1948. That year it was retired in favor of a gasoline unit.

Back in the early 1830s Philip C. Van Brocklin, who had learned the trade of moulder in the New England states, moved to Canada to work in the iron foundry at Normandale, Ontario.

There he met with another New Englander by the name of Leonard and the two decided to pool their small resources and start a foundry at St. Thomas. The venture was not a success so the partners separated to try new fields.

Leonard went a few miles north to London while Van Brocklin moved on 50 miles east to the hamlet of Brantford, Ontario, where, in 1844, he built a small foundry and machine shop and began the manufacture of pioneer agricultural implements.

In 1849, Charles H. Waterous entered the firm and under his careful management the business began to grow, slowly but steadily. Steam power replaced the small tread horsepower, the buildings were enlarged and new lines of machinery were manufactured.

By 1860 the company was known as C. H. Waterous and Company and in 1874 was incorporated as The Waterous Engine Works Company Limited.

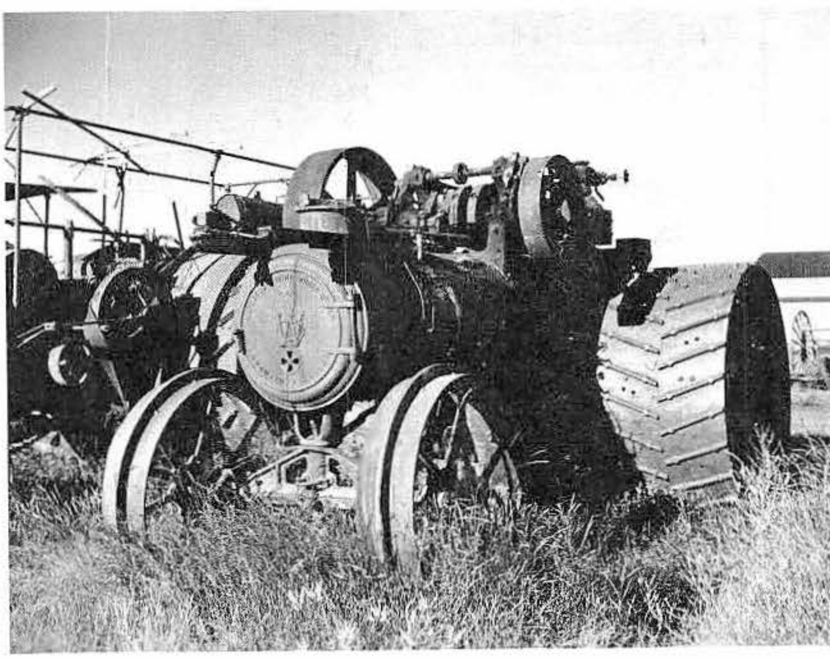
In 1877, David June developed and patented the Champion engine and, being connected with the family, gave the patent rights for Canada to the Waterous Company. Nine engines were built the first year; 85 in 1878; 185 in 1879; 210 in 1880, and so on until over 1,800 upright Champions were sold.

The Waterous firm pioneered in the traction field in Canada, coming out with its first traction in 1881.

In 1896 the Waterous Company began building traction engines in the 18 H.P. size with 8 ¾ x 10-inch cylinder, using the same gearing and controls as the Buffalo-Pitts engines made in the U. S. A.

When the gasoline tractor came on the market, the firm dropped steam, but never entered the gasoline field. The last new steam traction engine was built in 1911, but steam road rollers were built for some years after. No separators were built.

George Waterous, widely known for his executive and mechanical ability, was a native of Burlington, Vermont. He died in Brantford, Ontario, in 1892 at the age of 78.



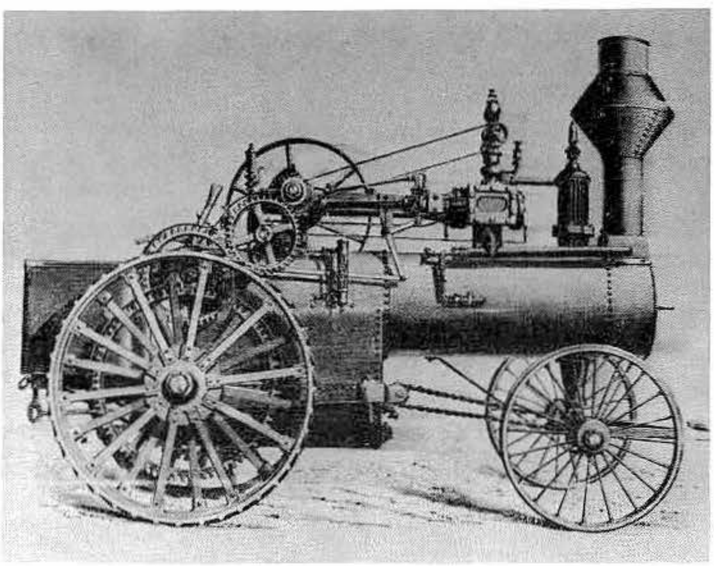
This 110 H. P. Waterous steam traction engine was built by the Waterous Works of Brantford, Ontario, Canada in 1907. It is owned by the Reynolds Museum of Wetaskiwin, Alberta, Canada. Waterous built this engine in a number of different horsepower sizes. The largest engines were 26 and 110 H. P. Both models had double flywheels. This is a double simple steam traction engine. This firm was known as C. H. Waterous & Co. in 1860 and was incorporated as the Waterous Engine Works Co., LTD., in 1874. This steamer came to the Reynolds Museum n 1955 from a sawmill southwest of Wetaskiwin, Alberta, Canada.

Watertown Engine Co.

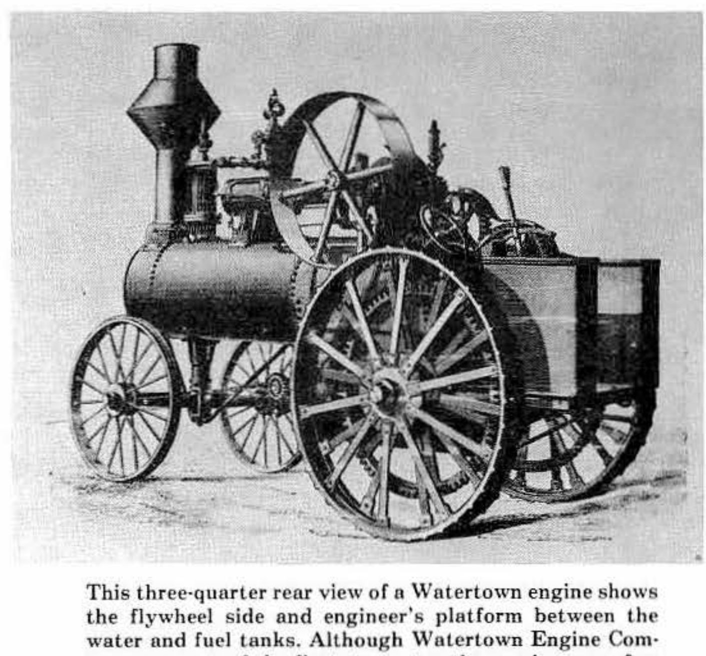
The Watertown Engine Co. succeeded Hood & Bradford, which had been established at Watertown, N.Y. The company won a medal from the New York State Agricultural Society for a portable farm engine.

The company appeared a few years later at the State Fair at Rochester, N.Y., with its first steam traction engine. The company was building steam traction engines in 1888 with a cast iron steam dome.

While Watertown was among the first to build farm engines, the company went out of the picture before the turn of the century. The firm also built engines for a number of other firms, one of which was John S. Davis & Son of Davenport, Iowa, Davis later built and sold the Watertown type of steam traction engine.



A Watertown steam traction engine was built by the Watertown Engine Co. of Watertown, N. Y. in 1888. Watertown engines were built in 6; 8; 10 and 15 H.P. sizes. In 1879 Watertown Engine Co. succeeded Hood & Bradford, established in 1884.

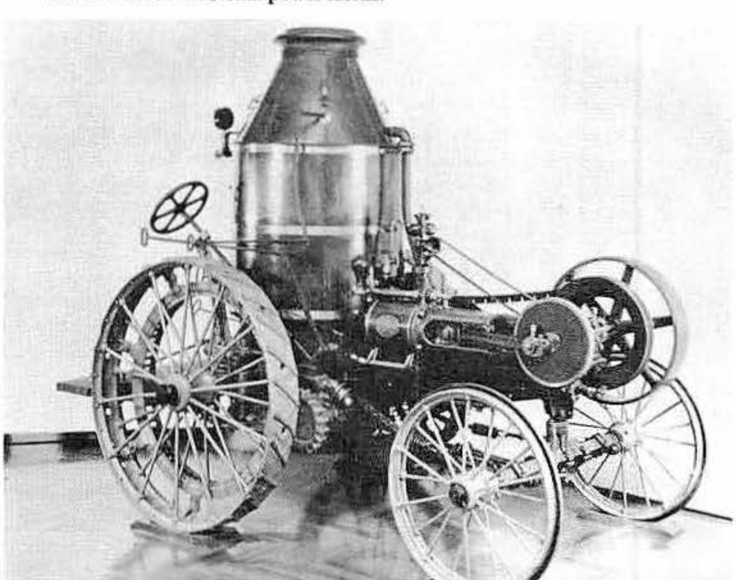


This three-quarter rear view of a Watertown engine shows the flywheel side and engineer's platform between the water and fuel tanks. Although Watertown Engine Company was one of the first steam traction engine manufacturers in New York State, it had a relatively short career, being off the market before the turn of the century. One of the few remaining Watertown engines still remaining is similar to this 12 H.P. model. It is owned by Ed Rabas of Oconto Falls, Wis. The engine does not have any serial number, but Mr. Rabas knows that it was built in 1889. He found the engine in 1947 in northern Michigan, about 25 miles from Iron Mountain. It appears that it spent its entire life in that area, being used to haul and saw lumber.

Westinghouse Co.

Proud of his 6 H.P. Westinghouse steam traction engine, built by the Westinghouse Co. of Schenectady, N. Y., in 1897, is owner William Van Natta of Johnson City, N. Y. The first Westinghouse threshing machine was designed and built by the senior George Westinghouse in 1833, at Minaville, N. Y. Then, in 1856, he moved his factory to Schenectady, N. Y., This engine's upright boiler made it entirely safe in going up or downhill without carrying an excessive amount of water. It also was very handy to set, as it was unnecessary to be particular in leveling up when threshing, as was the case with other styles of boilers.

This 10 H.P. Westinghouse steam traction engine, built in 1885, is part of the collection of Greenfield Village and the Henry Ford Museum at Dearborn, Mich. It has a jacketed boiler. A V-belt is used to the tractive gear, which is reversible. Henry Ford and President Harding, on some of their vacations, would go out looking for such engines and have them shipped back to Dearborn for the museum that Ford was proposing at that time. Henry Ford was one of the major proponents of advancing the design of American farm machinery, but he was convinced that the future of the farm tractor was in the gasoline powered field rather than in the steam power idiom.



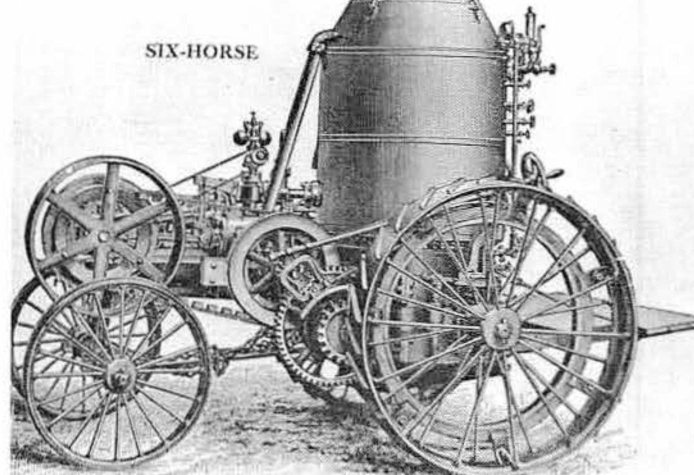
The first Westinghouse threshing machine was designed an built by the senior George Westinghouse in 1833-34, at Minaville N.Y., It proved so successful in filling the great need in those day for a machine to supplant the flail that, seeing a great futur ahead for it, Westinghouse procured a factory in the winter o 1835-36 at Central Bridge, N.Y. Afterwards he greatly enlarge the plant, and there for 20 years he made and sold threshin machines. But, as the business grew, he saw that a more centra location and greater transportation facilities were required. I 1856 he moved his factory to Schenectady, N.Y.

Westinghouse strove to maintain a reputation for his machine for quality, durability and service, rather than the matter of price This policy was so well carried out, and the same policy main tained by his sons and successors, that the name Westinghous stood for quality and for the best in its line—so they said.

All the Westinghouse steam traction engines used the uprigh boiler. The boilers were jacketed with heavy sheet iron, and use a spark arrester. All boilers were made of the best quality of stee for the shell—of 60,000 pounds tensile strength. The compan claimed that the friction belt that was used made a decided im provement in the methods for transmitting power from the engin shaft to the traction parts, and extended use, they said, proved it efficiency.

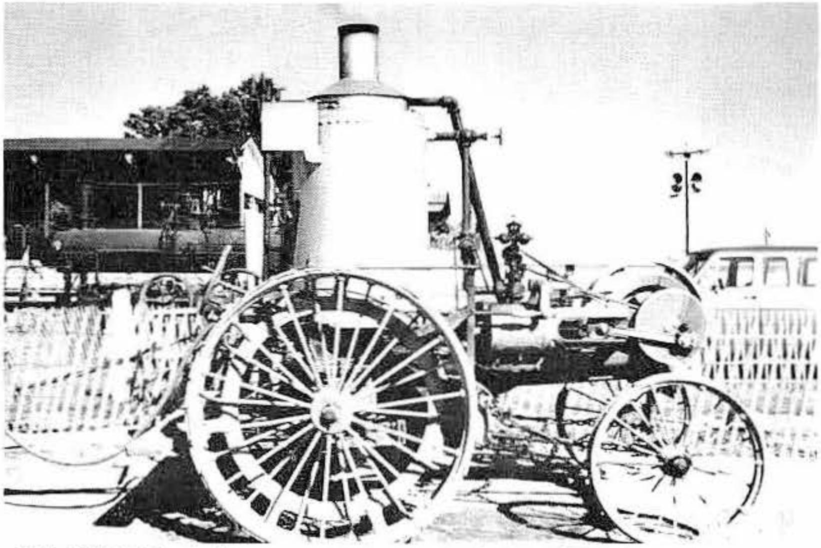
The belt was of V shape, and ran upon pulleys with corres ponding grooves. The actual weight of the engines was very muc less than any other engine of the same capacity. The units use the balanced piston valve. The soot cleaner consisted of a stean jet placed directly over the tubes, and the tubes could be cleane at any time by simply opening a valve. The water tank was locate over the front part of the engine.

The Westinghouse Co. made the following: steam traction en gines all of the upright boiler type; steam portables; the West inghouse grain thresher; Westinghouse clover huller; water tan and fuel wagon; mounted horsepowers; tread power machines and a circular saw-mill.

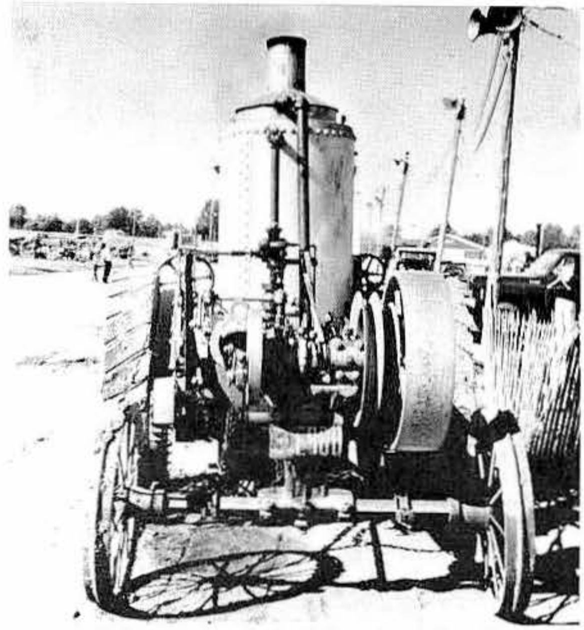


Still being produced in 1917 was the upright boiler 6 H.P. Westinghouse steam traction engine. This engine's driving wheels had the improved pattern face, were of good width, and were good climbers. The main and compensating gearing was of a heavy pattern.

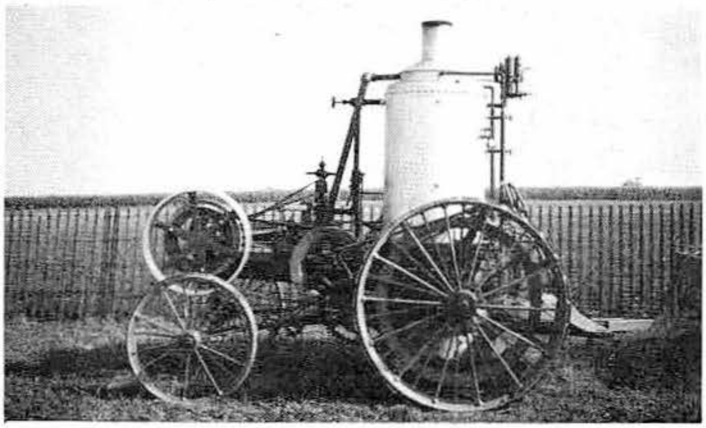
Westinghouse Co.



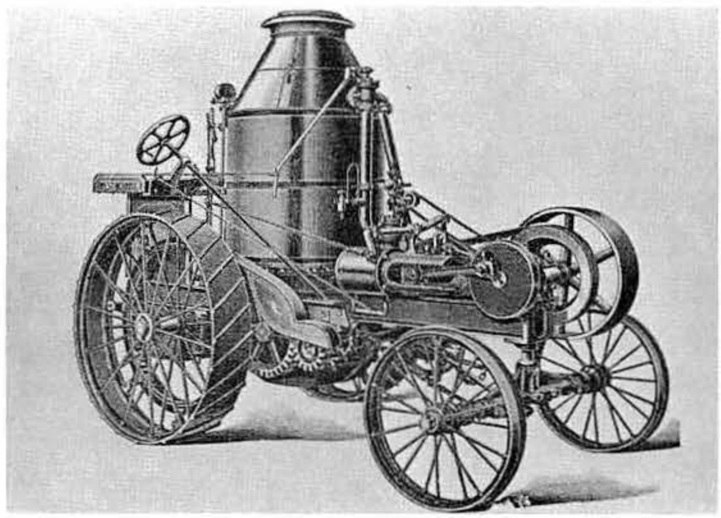
This 10 H.P. Westinghouse steam traction engine, built in 1885, is owned by Morgan Hill of Linesville, Pa. The nicely restored machine is shown here participating in the annual show of the Pioneer Steam & Gas Engine Society of Northwest Pa., at Meadville, Pa. This is the right or cylinder side of the engine.



A strange looking creature indeed when viewed from the front is the 1885 model Westinghouse owned by Morgan Hill. This 10 H.P. unit carries a Pennsylvania tractor license plate. Westinghouse built only upright boiler engines, of rather unusual but highly successful design.



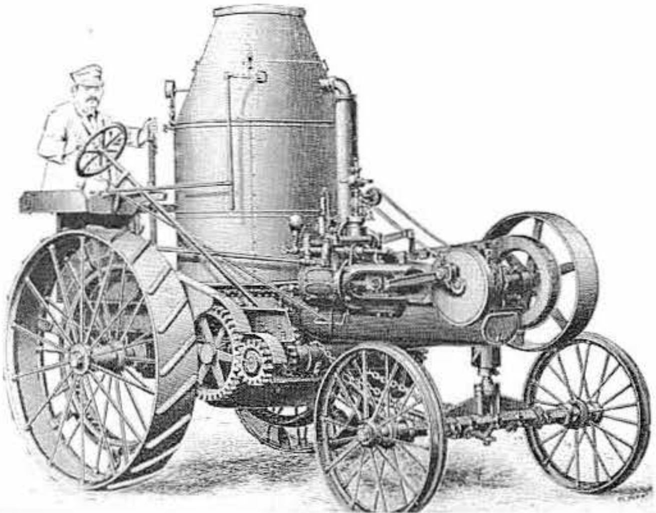
This is the left or flywheel side of the 10 H.P. Westinghouse owned by Morgan Hill. This engine has a silver boiler, red wheels and frame, and black pipes and gears. Westinghouse did not use water tanks or fuel bunkers on these engines, and thus, a tender had to be towed when the engine was being transported or used for traction purposes.

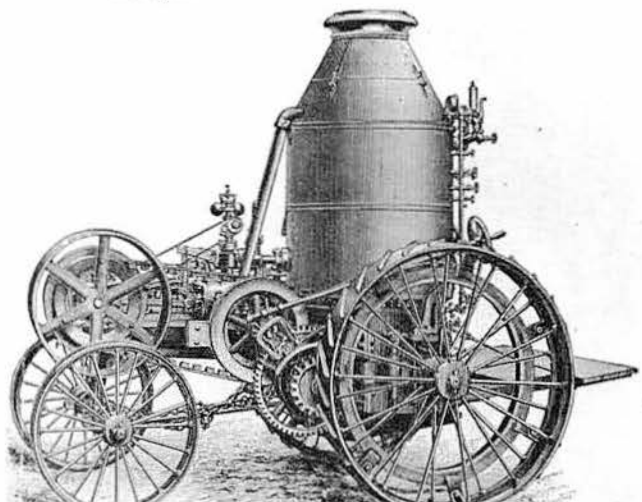


Built in 1917 was this 10 H.P. Westinghouse steam traction engine. The wheel track of this engine was standard wagon gauge. It was provided with two speeds for the road. It was light in weight, which was of great importance when bridges were considered.

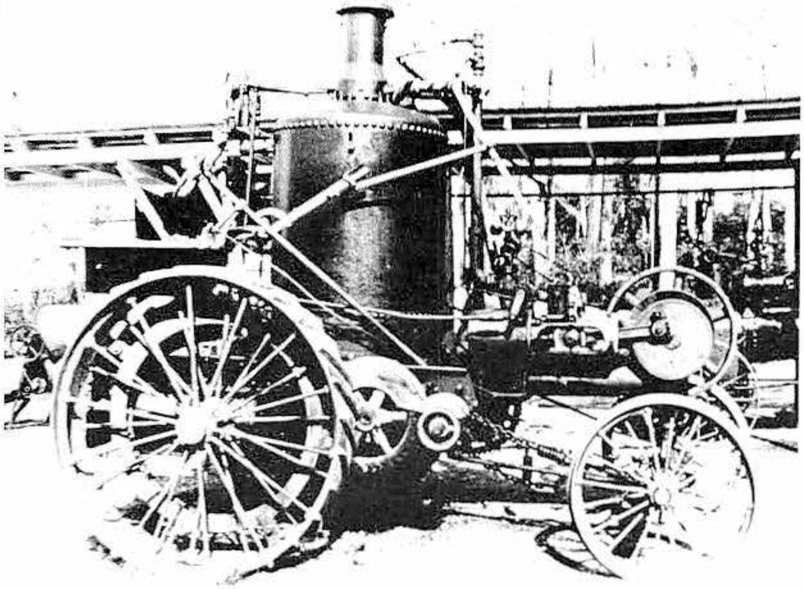
This 12 H.P. Westinghouse steam traction engine was pictured in an 1898 Westinghouse Co. catalog. The company claimed that the friction belt that was used made a decided improvement in the methods for transmitting power from the engine shaft to the traction parts.

A 10 H.P. Westinghouse steam traction engine was built in 1898. All the Westinghouse steam traction engines used the upright boiler. The company jacketed the boilers with heavy sheet iron and used a spark arrester. The boilers used the best quality of steel for the shell, which had 60,000 pounds tensile strength.

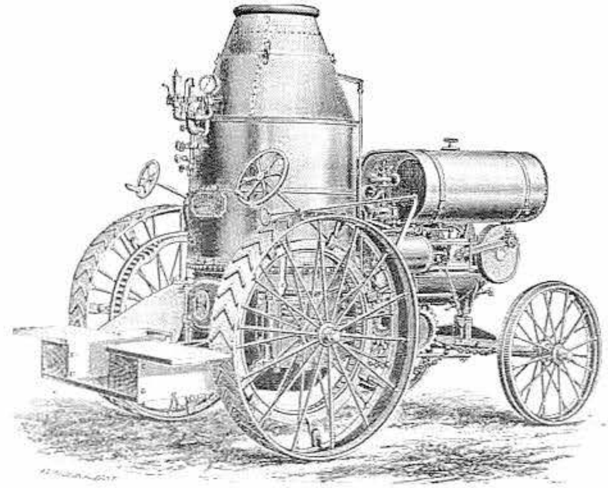




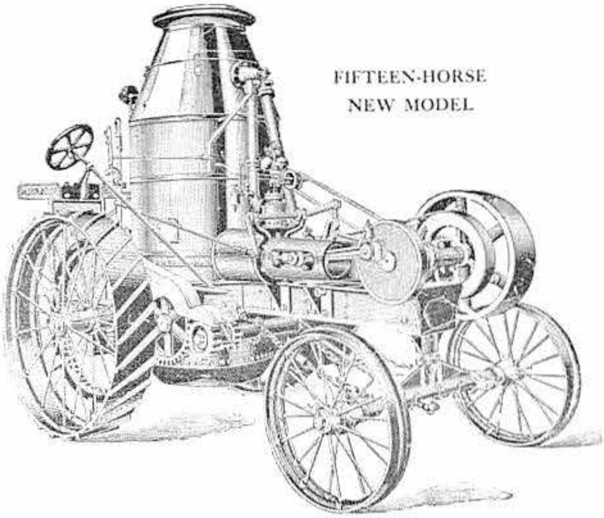
Westinghouse



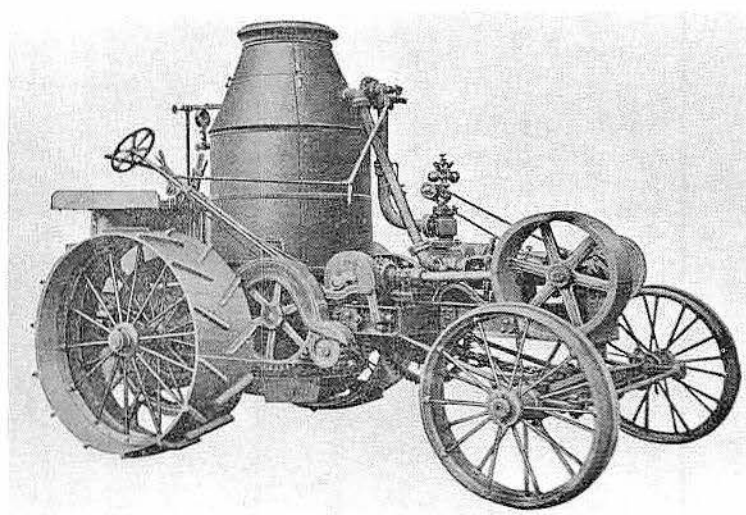
This 15 H.P. Westinghouse steam traction engine, built in 1895, is owned by Robert Rogers of Dillon, S. C. It is on display at the Farm Museum in Dillon. This engine was of unusual capacity, and was designed for plowing or road work. The jacket has been removed from the boiler.



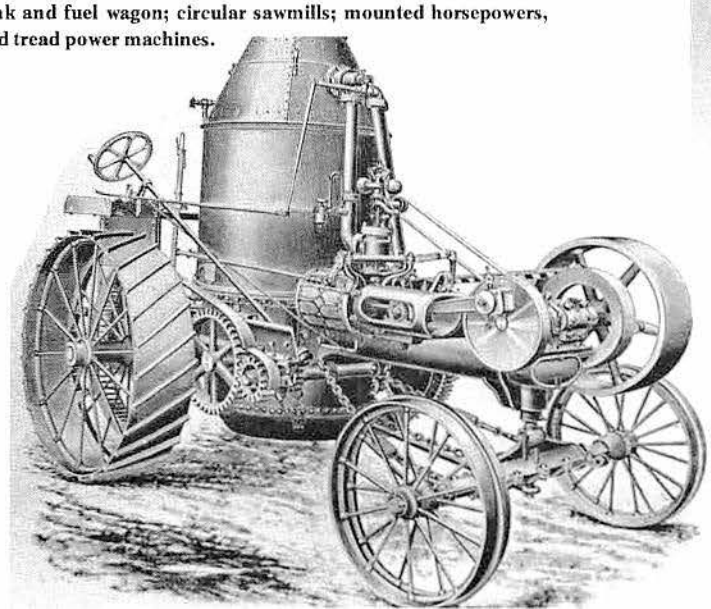
One of the few self-contained engines not requiring a tender was this 15 H.P. Westinghouse steam traction engine pictured in an 1886 Westinghouse Co. catalog. This engine had the water tank located over the front part, and was provided with a special platform with coal bunkers. The face of the drivers could be extended to 16 inches wide. This engine, with two barrels of water in the tank, weighed about 10,000 lbs., which was less than the weight of the average 10 H.P. engine in use at that time.



Little changed from the 1886 model was this 1917 style 15 H.P. Westinghouse steam traction engine. This engine's link and reverse arrangement was of the most improved pattern, and together with the steering apparatus, was so arranged that the handling of these engines could be done by one person upon the fireman's platform.



The largest Westinghouse engine produced was the 18 H.P. model. This version, dating from 1898, is in conventional Westinghouse pattern, with the engine on the right and the flywheel on the left side. In this era, Westinghouse was quite active in the agricultural field, producing steam traction engines of the upright boiler design; portable steam engines; the Westinghouse grain thresher; the Westinghouse clover huller; water tank and fuel wagon; circular sawmills; mounted horsepowers, and tread power machines.



In 1917, the largest Westinghouse steam traction engine built continued to be the 18 H.P. model. However, this machine, unlike the smaller models, was substantially changed from the earlier designs of the 1880s. The engine was now gear driven, rather than operating on belt drive, and was provided with an improved friction clutch. The bevel gears of the traction drive could be disengaged when threshing. All bearings were large and were set in heavy boxes. The front and rear wheels had wide faces, and the rear wheels had a locking device to hold the engine stationary while powering a belt. Although it carried a rating of 18 H.P., Westinghouse claimed the engine developed 40 brake H.P. when working the belt at 125 P.S.I. boiler pressure.

George White & Sons Co.

George White was born in Devonshire, England. As a young nan he learned the blacksmith trade at his father's wagon-building shop and, had he not decided to visit Canada on his wedding rip, a name prominent in the annals of Canadian industry might ›e missing.

Arriving at London, Ontario, in 1857, George White was lelighted with the young country and decided to stay and open up ı blacksmith and general repair shop in the fast growing city. Iowever, he was soon enticed with the prospect of owning a hunlred acres of land and the next few years found him farming a ew miles north of London. White's knowledge of ironworking ›ecame too well known and his services were so much in demand hat he decided to move back to the city and reopen shop. Busiıess was good and his small shop grew steadily and soon became cnown as the Forest City Machine Works.

During his farming days George White became conscious of he great need for a suitable agricultural steam engine and since ıe had the shop and tools, he began to work on plans for the nanufacture of such an engine. Several small steam engines were lesigned and built. When he was satisfied with his engine, he set ıbout acquiring the necessary boilermaking machinery. Finally, sometime in the early 70s, his first portable farm engine was com›leted, to be followed by many hundreds more known from coast o coast in Canada as White's Threshing Engine.

During the late 70s and early 80s, George White made several ›ioneer trips to the Canadian West and established his machines n that fast developing area. The first engines had to be shipped ia U.S. railroads and hauled the long distance north by horses or ›xen. After the Canadian Pacific Railway crossed the prairie, a arge warehouse was built at Brandon, Manitoba, to serve western Canada.

In the mid 90s, steam traction engines were becoming popular ınd to meet this demand the White factory built a number of raction engines of the return flue type using the U.S. Huber as a ›attern.

The George White engines were all simple and were built plain ınd sturdy, with no fancy fittings.

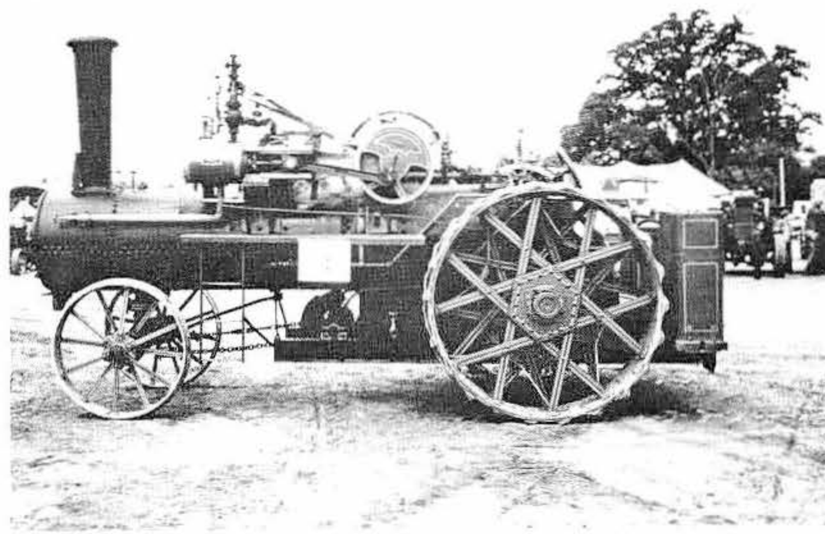
Previous to 1898 only engines were built. That year the firm absorbed the plant of the Macpherson Co. of Fingal, Ontario, which had been building the Challenge separator. This machine, already highly developed and well known, rounded out the White output advertised as "The First Quality Line,"

Self feeders and rear-cutting attachments were later added and the Challenge was built in all sizes to suit the eastern and western trade.

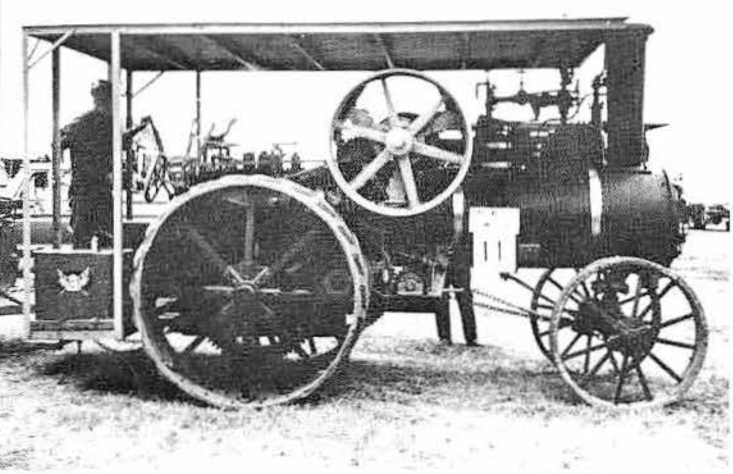
When the demand came for gas tractors, the firm became Canadian agents for the All Work kerosene tractor. Later the John Deere tractors were handled for many years and then the B. F. Avery agency was secured.

George White had nine sons and three daughters. After finishing school, several of the boys started to work in their father's factory. Upon completing his apprenticeship, each son was absorbed into an executive position in the firm which became known in 1880 as The George White & Sons Co. One son died in 1899 but six of the boys remained with the firm for many years. One of the younger boys, Ernest, was vice-president.

The last new machine was built in 1924, but engines were repaired and rebuilt for many years after. However, unlike many early threshing machinery manufacturers, The George White & Sons Co., Ltd., is still going strong, building a variety of farm power machinery.

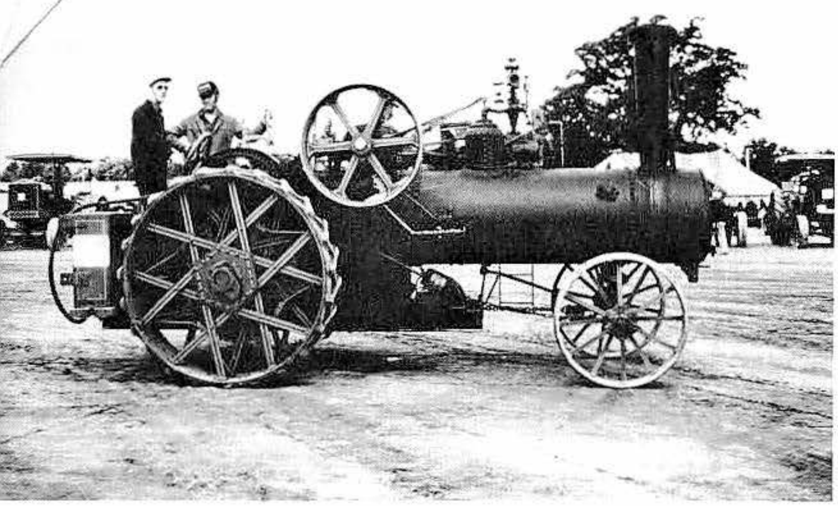


This attractive 25 H.P. George White & Son steam traction engine, built in 1920, is owned by Bill & Peter Watson of Kilbride, Ontario. It is on display at the Ontario Steam and Antique Preservers Assn. show at Milton, Ontario. This engine was purchased in January, 1920, from George White & Son Co. at London, Ontario, for the sum of $2,650 by a Mr. McBride of Glen Meyer, Ontario. For a number of years McBride used the engine for threshing and saw-milling. The second owner was the late Ernie Simmons of Tillsonburg. For years it sat idle in his yard and the wheels settled a foot in the earth. On Sept. 3, 1970, Bill Watson purchased the engine at the Simmons auction sale and transported it home to Kilbride. The boiler was beyond repair. In the spring of 1971, an identical boiler, which was used to supply heat to greenhouses, was located at Mount Albert. Bill Watson sold half interest of the engine to his brother Peter, as restoration was a mammoth job. The brothers spent the next three years changing the boiler and rebuilding the engine. The work was done by themselves, with a lot of help from friends and neighbors. The engine carries an Ontario certificate for a shell pressure of 100 lbs. They were awarded the Johnson-Holt trophy for the best restoration at the 1973 Steam-Era show.

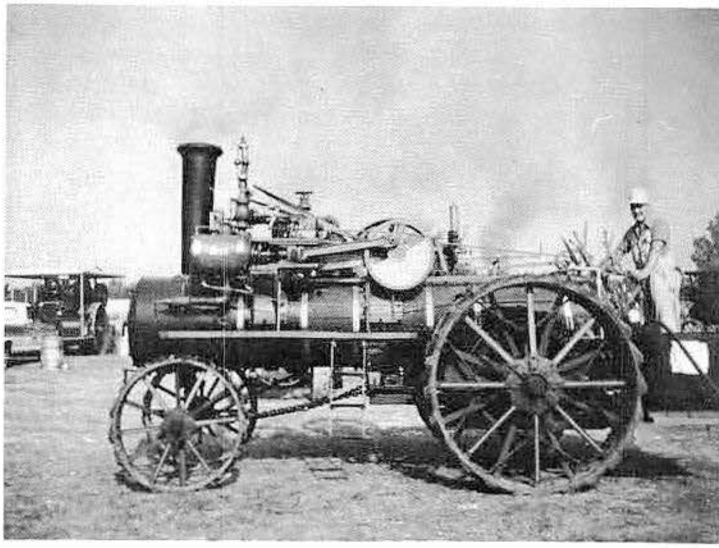


This 20 H.P. George White & Son steam traction engine, built in 1907, is owned by Ernie Allen of Ontario, Canada. It is in action at the Ontario Steam & Antique Preservers show at Milton, Ontario.

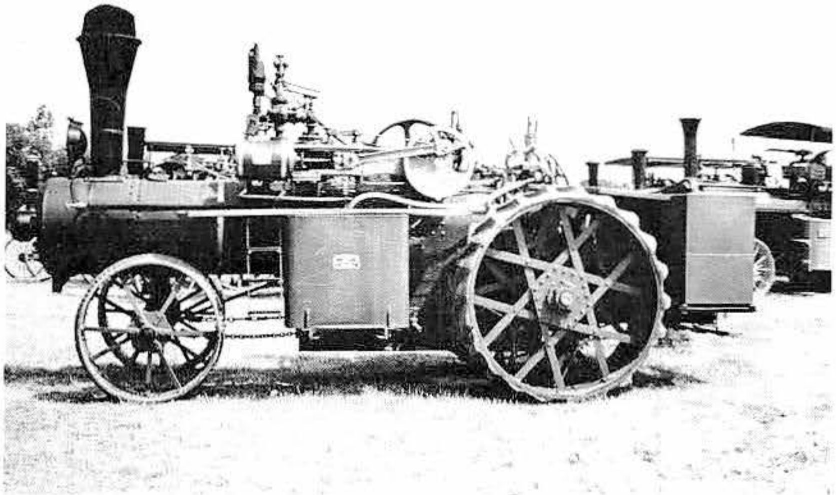
George White & Sons Co.



Bill and Peter Watson show off the fly-wheel side of their 25 H.P. George White & Son steam traction engine, built in 1920. This engine is in action at the Ontario Steam and Antique Preservers Assn. show at Milton, Ontario.

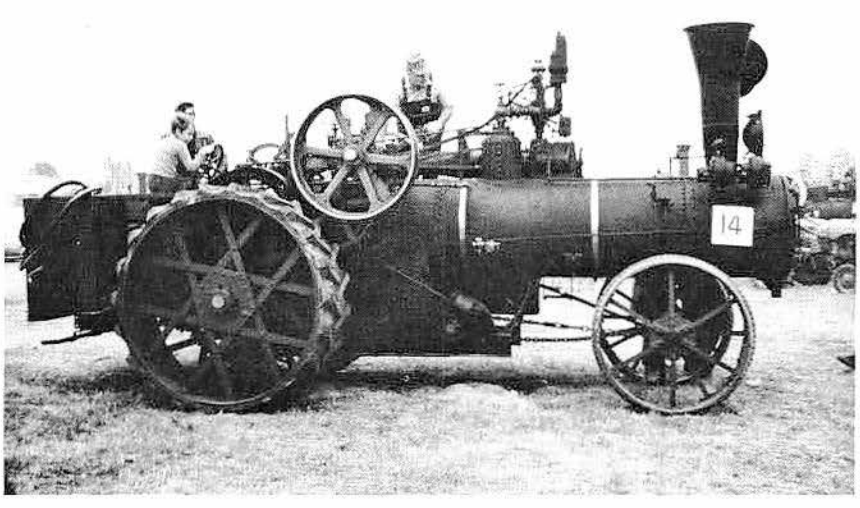


This 25 H.P. George White & Son steam traction engine, built in 1916, is owned by Gordon Isbister of Mount Hope, Ontario. It is participating in the Ontario Steam & Antique Preservers show. Arriving at London, Ontario, George White in 1857 was delighted with the young country and decided to stay and open up a blacksmith and general repair shop in the fast growing city. Business was good and his small shop grew steadily and soon became known as the Forest City Machine Works.

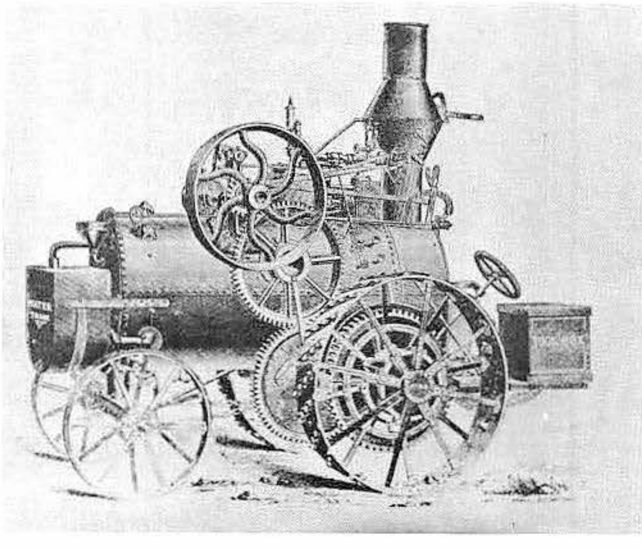


This rear mounted 25 H.P. George White & Son steam traction engine, built in 1923, is owned by John Calder of Jerseyville, Ontario. It is in action at the Ontario Steam & Antique Preservers Assn. show at Milton, Ontario. This is the fly-wheel side.

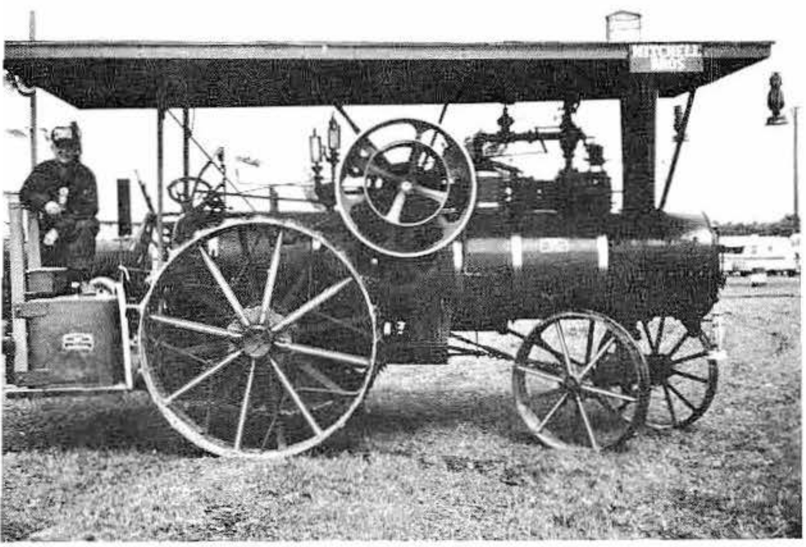
This is the cylinder side of the 1923 rear mount 25 H.P. George White & Son steam traction engine owned by John Calder of Jerseyville, Ontario. It is on display at the Ontario Steam & Antique Preservers Assn. show at Milton, Onatrio. During his farming days, George White became conscious of the great need for a suitable agricultural steam engine. Since he had the shop and tools, he began to work on plans for the manufacture of such an engine. Several small steam engines were designed and built, and when he was satisfied with his engine, he set about acquiring the necessary boiler-making machinery. Finally, sometime in the early 1870s, his first portable farm engine was completed, to be followed by many hundreds more known from coast to coast in Canada as "White's Threshing Engine."



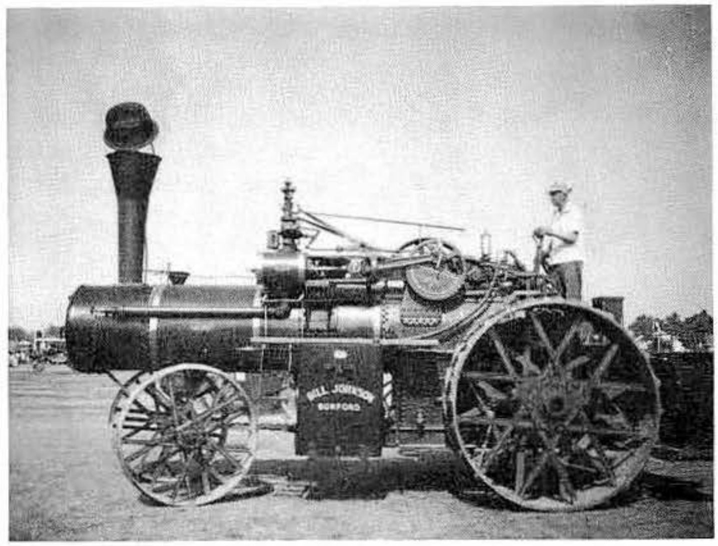
This is a very early return flue steam traction engine built by George White & Sons, London, Ontario. The George White engines were all simple, and were built plain and sturdy with no fancy fittings. Note the gear arrangement from the crankshaft.



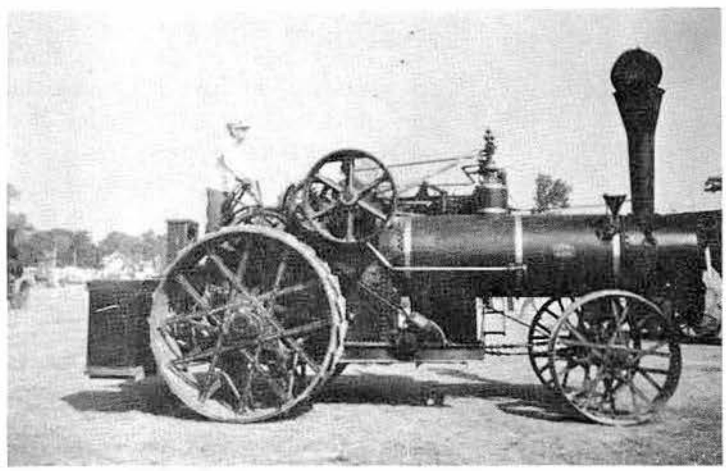
George White & Sons Co.



This 25 H.P. George White & Son steam traction engine, built in 1926, is owned by Straight Mitchell of Clear Creek, Ontario. It is at the Norwich and District Historical Society show, Norwich, Ontario. During the late 1870s and early 1880s, George White made several pioneer trips to the Canadian West and established his machines in that fast developing area. The first engines had to be shipped via U.S. railroads and hauled the long distance north by horses or oxen. After the Canadian Pacific Railway crossed the prairie, a large warehouse was built at Brandon, Manitoba, to serve West Canada.

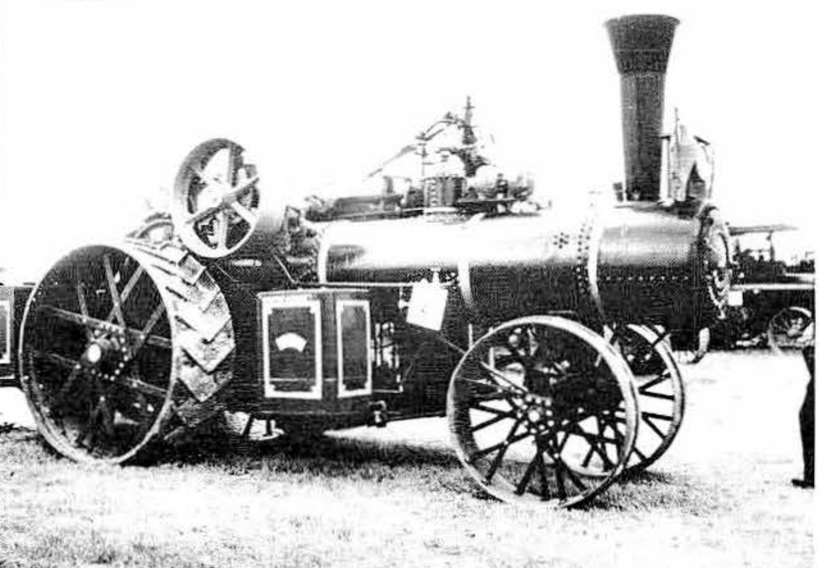


Bill Johnson of Burford, Ontario, pilots his 28 H.P. George White & Son steam traction engine at the Ontario Steam & Antique Preservers show.

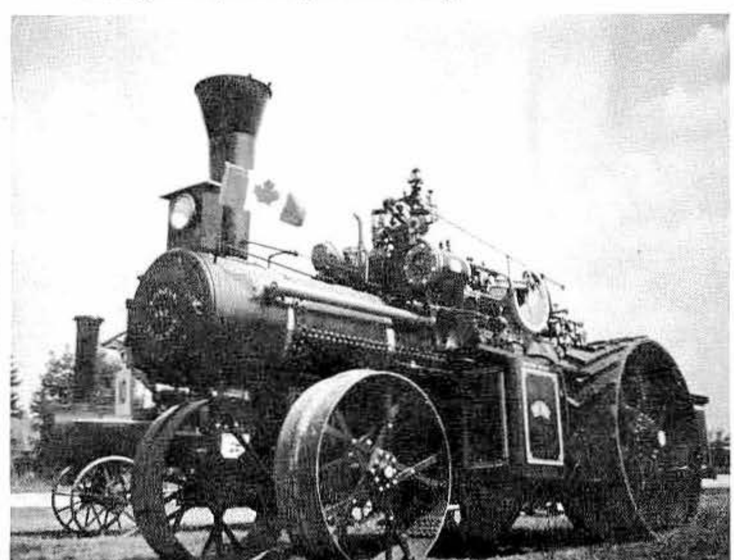


This is the fly-wheel side of the 28 H.P. George White & Son steam traction engine, built in 1914, which is owned by Bill Johnson of Burford, Ontario. When the demand came for gas tractors, the George White firm became Canadian agents for the ALL WORK kerosene tractor. Later, John Deere tractors were handled for many years. Bill Johnson's engine is # 984.

This huge 28 H.P. George White & Son steam traction engine, built in 1916, is owned by Wilfrid Leslie of Ontario, Canada. It is on display at the Ontario Steam & Antique Preservers show. The first owner of this engine plowed with a breaker plow on the prairie, west of Selkirk, Manitoba. During a wet season, while plowing, the owner became stuck in a slew, and in disgust he left the entire outfit there. A Canadian Pacific railway engineer saw this engine and inquired as to who the owner was. He purchased it, brought it to Winnipeg, and there he restored it. After his death, Wilfrid Leslie purchased the engine and brought it to Ontario.



This is the cylinder side of the 28 H.P. George White & Son steam traction engine owned by Wilfrid Leslie of Ontario. The last new George White machine was built in 1924, but the engines were repaired and rebuilt for many years after. However, unlike many early threshing machinery manufacturers, the George White and Sons Co. is still going strong, building a variety of farm power machinery.



Wide Awake

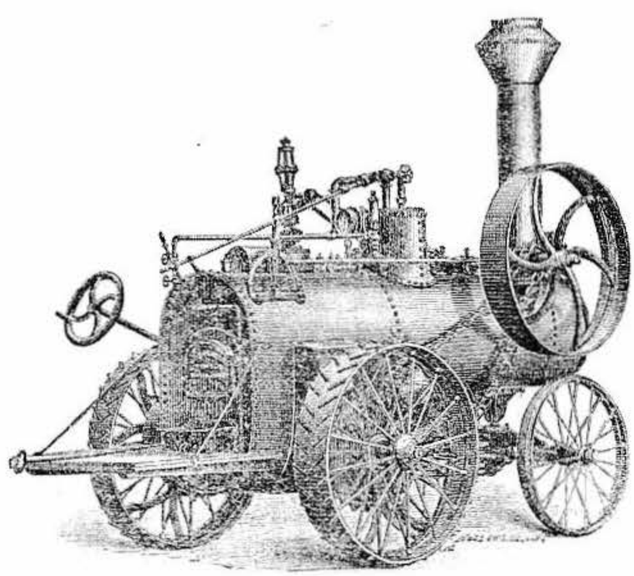
In the summer of 1882, J. O. Spencer of Union Springs, N.Y., decided to move his plant to Waterloo, N.Y. Land on the north side of the New York Central tracks between Church St. and Swift St. was purchased, and contracts made for the erection of new buildings. The main building, exclusive of the boiler and blacksmith shop, was 289 feet in length by 40 feet wide, 193 feet of which was of two stories in height. The boiler house was 60 x 40 feet.

The shops were completed and lighted by electricity in early 1883, being the first electric lights in Waterloo. The buildings were heated by steam, which called to the attention of Waterloo the advantages of steam heat, and which resulted in the greater use of steam for heating in that town. In August 1884, the newspaper stated that the Spencer Wide Awake Works already had turned out 65 engines and 100 threshing machine separators that year.

These steam traction engines were built on an entirely new pattern. Special attention was made to make all parts strong and durable, and the material throughout was of the best.

The boiler plate had a tensile strength of 55,000 lbs. square inch. Steel fire box, steel flues and steel flue sheets were used. Trimmings were first-class and the boiler was mounted on steel springs. The company used an improved spark arrester, affording good draft and safety against fire.

The J. O. Spencer, Son & Co. made the following: the Wide-Awake steam traction engine; steam portable engine; Wide-Awake thresher and spearator; hoisting drum; stationary engines, and the standard farm engines.



A Wide-Awake steam traction engine was built in 1885 by J. O. Spencer, Son & Co. of Waterloo, N. Y. This picture was taken from a 1885 J. O. Spencer catalog. This engine weighed 6,000 lbs. and cost $1,200 new. In the summer of 1882, J. O. Spencer of Union Springs, N. Y., moved his plant to Waterloo, N. Y. By August, 1884, the J. O. Spencer Wide-Awake Works already had turned out 65 engines and 100 threshing machine separators that year. The company made the Wide-Awake steam traction engine, steam portable engines, Wide-Awake thresher and separator, hoisting drum, stationary engines, and standard farm engines. There are no known Wide-Awake engines existing today.

Wood Bros. Thresher Co.

Franz John Wood, founder of the Wood Brothers Thresher Co., was born in Fremont township, Wiona County, Minnesota, in March, 1864.

F. J. Wood and his brother, R. L. Wood, started making harvesting machinery in 1893 in Rushford, Minn. Later they founded the nationally known Des Moines, Iowa, firm of Wood Brothers, Inc. The Wood Brothers moved the factory to Des Moines in 1899 and built the present plant in 1926. F. J. Wood was president until 1945, when he retired. The factory was later sold to Dearborn Motors of Detroit. In 1955 the Wood Brothers plant became the Des Moines implement plant of the Ford Motor Co.

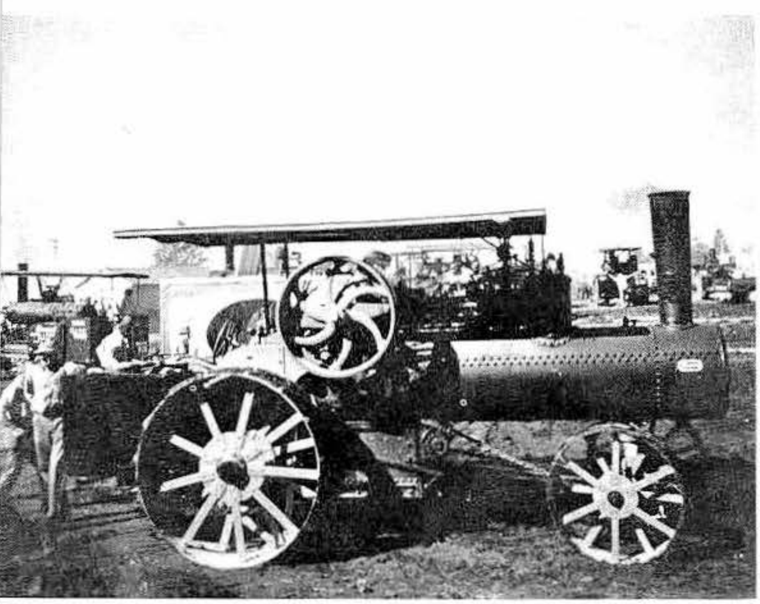
During F. J. Wood's career, he designed a full line of threshing machinery and steam traction engines and he took out a total of 26 patents. His last patent, applied for in 1949, was for a self-feeding chicken feeder, a modification of the first invention he made as a boy.

The Wood Brothers Thresher Co. was incorporated in 1911 as successor to Wood Brothers steel Self Feeder Co., incorporated in 1899.

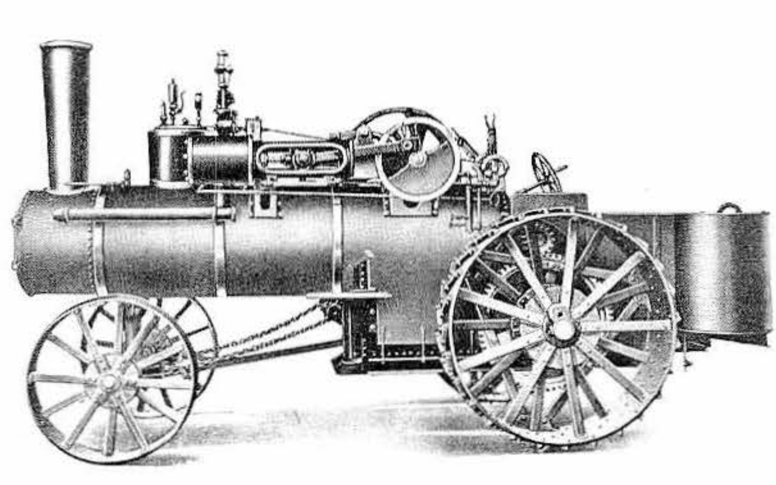
F. J. Wood, on a trip to St. Francis, designed and built the most powerful steam traction engine that was on wheels at that time. While there he saw several steam traction engines breaking the prairie—and they were all having trouble breaking gears.

Sitting in the train on his way home, he conceived the idea to build a double geared traction engine for plowing and breaking the prairie. Several years later he built this engine, and it proved to be what he called "My Masterpiece." Realizing the great strain that would be constantly on the gears, bearings, and shafting, he made these all extra heavy and encased the gears in order that they might run in oil. The engine ran as smooth as glass. Its boiler had 80, 2-inch flues. He showed the engine at the Iowa State Fair, shipped it to the Minnesota Fair, then to the South Dakota Fair where he put on plowing demonstrations.

The Wood Brothers Co. made the following: steam traction engines ; the Humming Bird thresher, and the Wood Bros. combine.

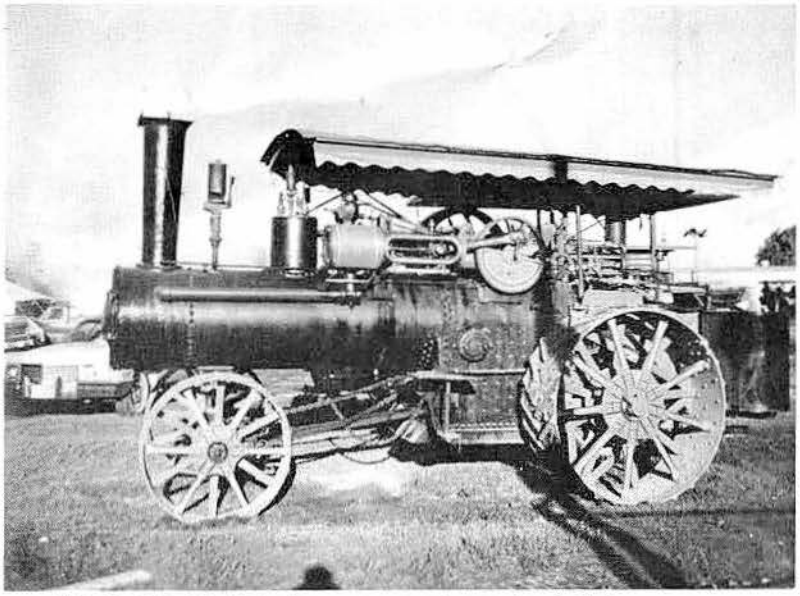


This 22 H.P. Wood Brothers steam traction engine, built by Wood Brothers Thresher Co. of Des Moines in 1915, is owned by Seyb & Kerr of Donnellson, Iowa. It is here participating at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa.

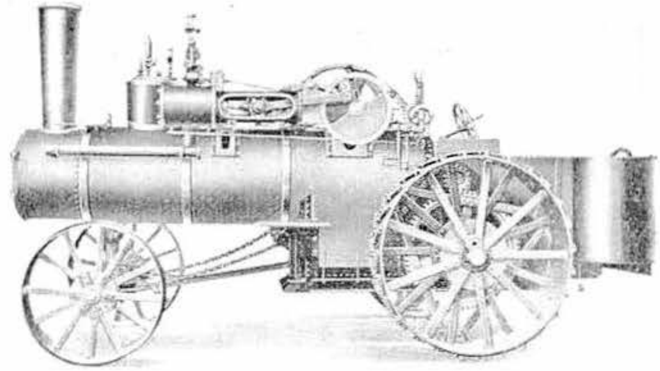


Built in 1915 was this 18 H.P. Wood Brothers steam traction engine. This engine is jacketed. The water tanks were mounted at the rear. Franz John Wood, founder of the Wood Brothers Thresher Co., was born in Fremont Township, Wiona county, Minn., in 1864.

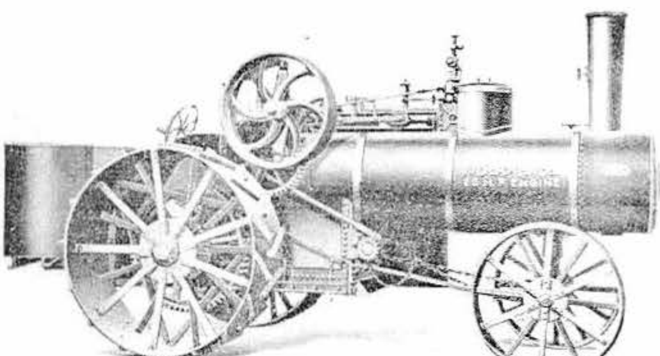
Wood Bros. Thresher Co.



This 22 H.P. Wood Brothers steam traction engine, built in 1917, is owned by Bud Wagner of Lockridge, Iowa. It is shown at the Midwest Old Settlers & Threshers Assn. show at Mount Pleasant, Iowa.

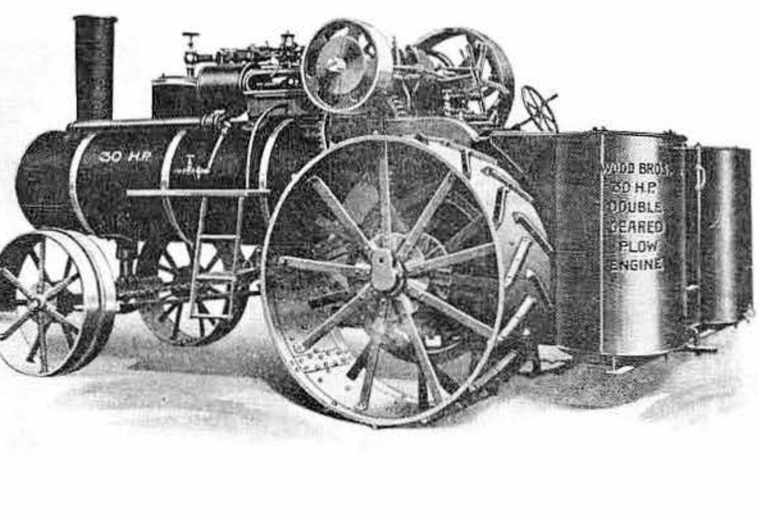


This is the 22 H.P. Wood Brothers steam traction engine built in 1919. This was a general purpose engine for grading roads and plowing. The Wood Brothers Thresher Co. was incorporated in 1911 as a successor to Wood Brothers Steel Self Feeder Co., incorporated in 1899.

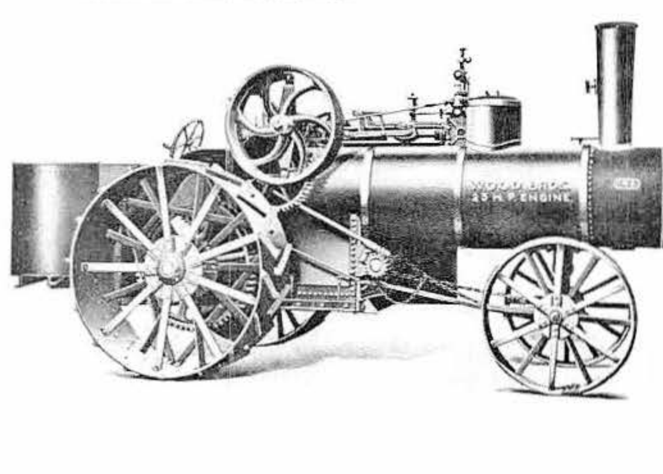


Built in 1919 was this 25 H.P. Wood Brothers steam traction engine. This engine was designed for plowing and hauling. All the engines were rear-mounted. The boilers were of the open firebox, dry bottom type for easy access to repair or replace flues.

The largest engine of the line was the 30 H.P. Wood Brothers steam traction engine built in 1915. This engine was a center crank type, with double traction gears especially designed for plowing and heavy hauling. The Wood Brothers Co. made steam traction engines, the Humming Bird thresher, and the Wood Brothers combine.



Built in 1915 was the 25 H.P. Wood Brothers steam traction engine, designed for plowing and hauling. All these engines were equipped with the famous Wood Brothers patented horizontal type valve reverse gear, which was easy to operate and proved to be a real coal and water saver.



S. W. Wood Engine Co.

Sidney W. Wood was born in Kingston, Ulster County, N.Y., in 1829. In 1830, his father, Israel Wood, moved to the town of Galen, N.Y., and bought a farm. When he was 12 years old, S. W. Wood began running the Nathan Stevens saw-mill, which he operated until he was 17 years old. In that mill he cut out timbers used as sleepers in constructing the roadbed of the old Auburn Railroad. At that time the railroad was built by spiking strap iron rails on to "sleepers."

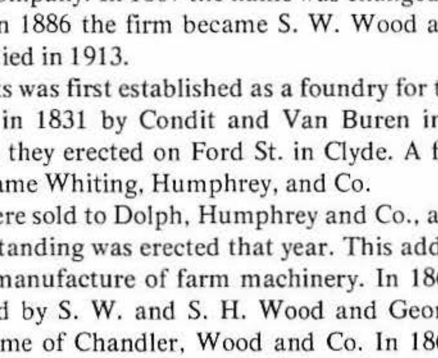
In 1846 Mr. Wood was employed in the Deacon Taft Foundry at Lyons, N.Y. From there he went to the Seneca Lake Foundry at Lyons, N.Y. where he learned the trade of machinist. He was employed there for 20 years.

Mr. Wood and his family moved to Clyde, N.Y., in 1866 where he and his brother conducted the foundry and engine works of Chandler, Wood and Company. In 1867 the name was changed to S. W. Wood and Co. In 1886 the firm became S. W. Wood and Son. Sidney W. Wood died in 1913.

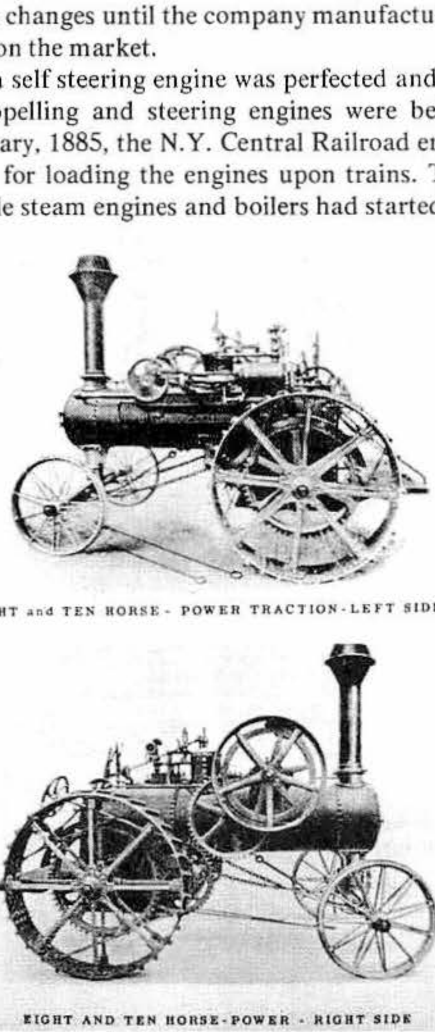
The Clyde Iron Works was first established as a foundry for the manufacture of plows in 1831 by Condit and Van Buren in a wooden building which they erected on Ford St. in Clyde. A few years later the firm became Whiting, Humphrey, and Co.

In 1843, the works were sold to Dolph, Humphrey and Co., and the stone building yet standing was erected that year. This added to the other work the manufacture of farm machinery. In 1866, the building was rented by S. W. and S. H. Wood and George Chandler under the name of Chandler, Wood and Co. In 1867, Chandler retired, and the name was changed to S. W. Wood and Co. In 1881 this firm put out a steam traction engine which passed through various changes until the company manufactured an engine equal to any on the market.

The following year, a self steering engine was perfected and by 1884, 30 H.P. self-propelling and steering engines were being manufactured. In January, 1885, the N.Y. Central Railroad erected a special platform for loading the engines upon trains. The manufacture of portable steam engines and boilers had started in 1868.



EIGHT and TEN HORSE - POWER TRACTION-LEFT SIDE



EIGHT AND TEN HORSE-POWER - RIGHT SIDE

Seth H. Wood died in 1886, and the following October Henry I. Wood purchased the interests of his uncle, continuing the business with his father as S. W. Wood and Son. In 1898, Sidney W. Wood and his sons, Henry L. and Ray G. Wood purchased the property from the estate of A. S. Field and following year erected new boiler and blacksmith shops and rebuilt the other buildings. In 1868 the firm had employed three or four men. By becoming the second firm in the state to manufacture portable engines the employment force increased to 25 or 30 men the year round ten hours a day.

In 1913, Sidney W. Wood died, and in 1914 the S. W. Wood Engine Co. was formed as a corporation with Henry I. Wood as president. The gasoline engine and tractor superseded the steam engine, the last of which was made in Clyde in 1926, when the firm reverted back to general machine and boiler work. The S. W. Wood Engine Co. survived until the death of Ray G. Wood in 1942, after which his brother, Henry I. Wood sold the company to Burt A. Morley of Oswego. Mr. Morley did a general machine business.

The S. W. Wood & Son Co. steam traction engine was provided with steam gauge, glass water gauge, gauge cocks, air cocks, whistle, safety valve, governor belt, sight feed oiler, oil cups, oil can, suction hose and strainer, flue cleaner, and poker and wrenches.

The engine used a balanced crank which gave a steady motion. The piston rings were eccentric spring style but so designed that when in place they were as tight as a solid ring, thus preventing steam from passing. The piston was cast hollow which removed the weight from the cylinder and brought friction to the minimum. The piston rod was steel, finely finished. It passed through the piston to the cross head and securely riveted to the back end of the piston. A pump was furnished to enable the engineer to supply the boiler with water when the engine was not at work.

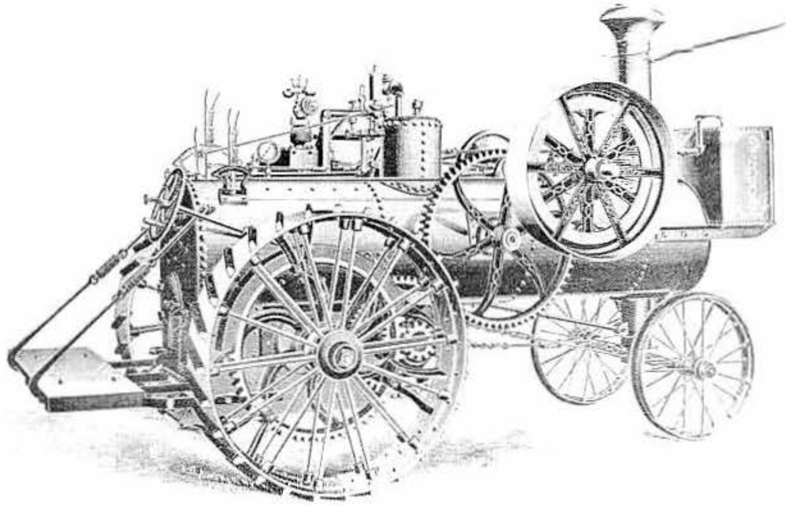
The water pipe passed from the pump through the engine bed to the boiler thus heating the water to nearly the boiling point as it entered the boiler, which effected a great saving of fuel. The traction engine was so arranged that the power was conveyed from the main shaft to the drive wheels without bringing any unnecessary strain upon the boiler.

The steering gear was upon the right hand side, thus bringing the flywheel directly under the view of the operator, to assist him in placing the engine in position for work. A large dome was placed in the middle of the boiler, where the variations of the water were the least, going up or down grade. This furnished abundant space for dry steam for the engine, as steam was taken from the top of the dome.

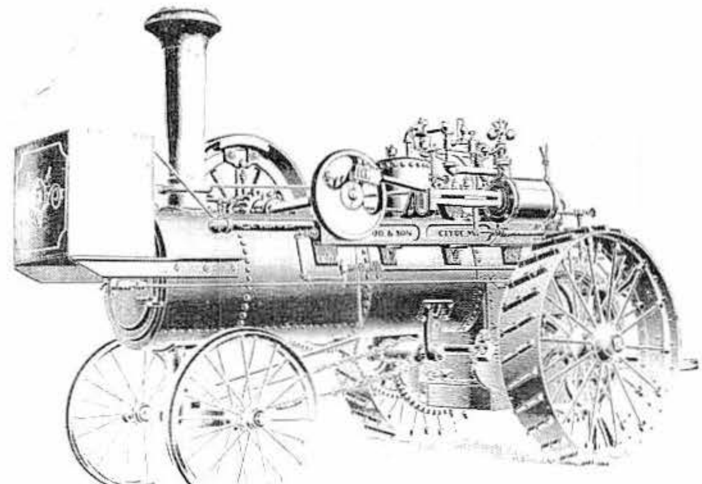
The S. W. Wood & Son made steam traction engines; steam portables, and steam engines on skids.

A 8 and 10 H.P. S. W. Wood & Son steam traction engine was built by S. W. Wood & Son Co. of Clyde, N. Y. This engine was so arranged that the power was conveyed from the main shaft to the drive wheels without causing any unnecessary strain on the boiler. The reverse was of the link motion, greatly improved. It was so arranged that the wear on the guide could be taken up in each direction, which made it more durable.

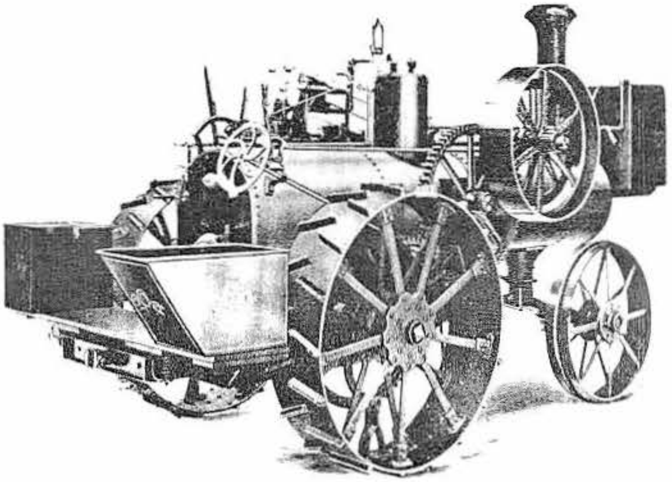
S. W. Wood Engine Co.



The operator's controls and platform are clearly visible in this rear quarter view of the 12 H.P. S. W. Wood & Son steam traction engine. This engine used a piston that was hollow, which removed the weight from the cylinder and cut friction to the minimum. The piston rings were the eccentric spring style but so designed that when in place they were as tight as a solid ring, thus preventing any steam from passing. The piston rod was of steel, finely finished. It passed through the piston to the cross head and was riveted to the back end of the piston.

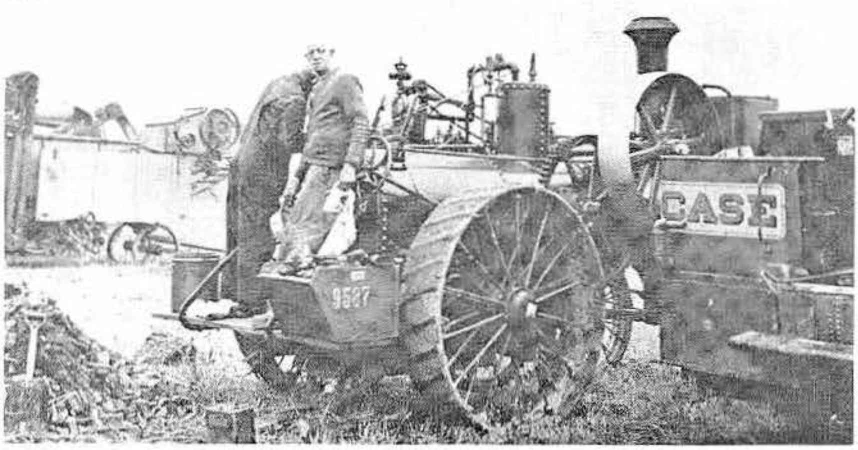


A good indication of the size of the water tank is visible in this front quarter view of the 12 H.P. S. W. Wood & Son steam traction engine. Its cross head was of cast iron, working between the four cast guides. The slide valve was of cast iron, designed to avoid as much friction as possible and conform to the openings in the steam chest. Being well chambered out, it gave ample opening for the exhaust steam. The pillow blocks were of ample width, filled with best babbitt metal, and furnished a sufficient bearing for the main shaft. The cap was so attached as to bring the strain of the main shaft directly upon the box, and not wholly upon the cap.



A good sized fuel bunker and toolbox were provided on the platform of the 16 H.P. S. W. Wood & Son steam traction engine. This engine's connecting rod boxes were of bronze metal and so designed as to be easily adjusted. The connecting rod was of wrought iron, with strap and wedge at each end for taking up wear. The lever throttle was furnished on all steam traction engines. A pump and injector was furnished with all engines to enable the engineer to supply the boiler with water when the engine was not at work.

This 16 H.P. S. W. Wood & Son steam traction engine was built in 1912. It is owned by George and Virgil Van Natta of Barton, N. Y. This is a rare engine, and it is believed there is not another like it. It was built at Clyde, New York.



The Wood & Son steam portable engine was built by S. W. Wood & Son Co. of Clyde, N. Y. This engine was built as a Class B of 6 H.P., or a Class C of 8 H.P. This engine's cross head had a wedge or shoe that was easily adjusted to take up wear. Only an injector was used for a boiler feeder with this style of engine.

Wood, Taber & Morse Co.

The Wood, Taber & Morse Co., was established in 1852, by A. N. Wood, L. C. Taber and Walter Morse, all of Eaton, N.Y.

The Wood, Taber & Morse four-wheel-drive steam traction engine had a counter shaft having a flexible joint, to allow one end to accommodate itself to the oscillations of the axle. This combination, in connection with a semi-spherical step on the axle, and with compensating gears to furnish the driver's differential movements, enable the company to provide the first road engine which had the power, practically and efficiently, applied to the four drivers simultaneously. While so applied, each driver pulled in travelling either forward or backward, in straight line or on a curve, entirely independently of any of the other drivers.

The entire weight of the engine and boiler was in this manner made useful to the traction power, and the traction power was made most efficient by being distributed upon four drivers.

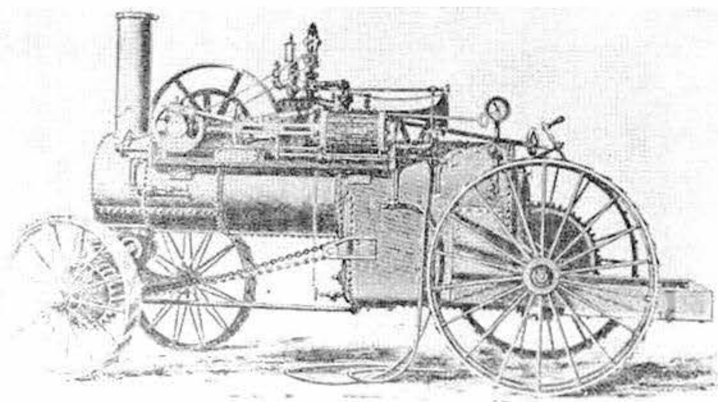
The result was to double the traction power, because the forward drivers assist proportionately to the load upon them, instead of being an obstruction to be pushed along.

The result of loading the forward drivers was also of utmost value in securing positive control and ease in steering on loose, stony, slippery, uneven, and otherwise difficult ground.

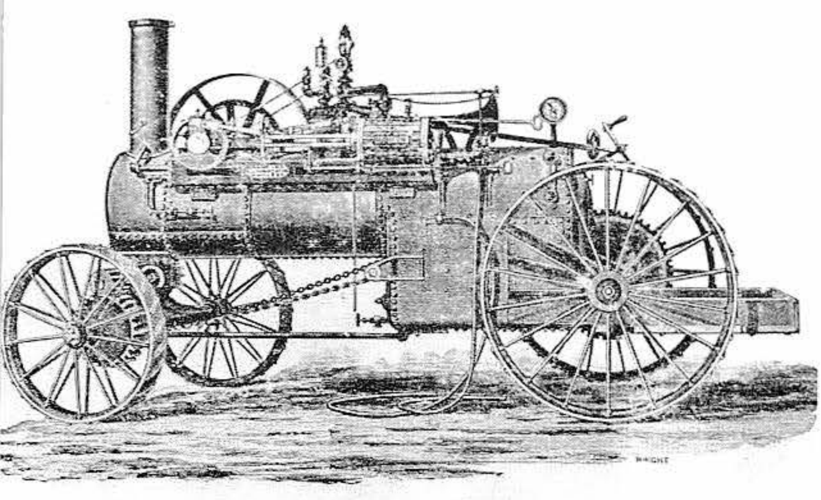
The traction attachments took power by a friction wheel applied by clutch, via rod and hand-wheel, to the inside rim of the fly wheel. The friction wheel had a pinion attached to its hub, from which pinion the power was conveyed by a train of gears, and through compensating gears to the rear axle. The first intermediate of the train conveyed power also to the counter shaft, which was over the forward axle. The counter shaft had a flexible joint to allow one end to accommodate itself to the oscillations of the axle. The semi-spherical step over the forward axle in which the flexible joint was partially enclosed, provided support and bearing for one end of the counter shaft, and the axle bed provided support and bearing for the second section of the counter shaft, which conveyed power through compensating gears to the forward axle.

The forward axle bed had a spherical socket which the semi-spherical step rested in. The center of oscillating motion of the forward axle was identical with the center of motion of the flexible joint of the counter shaft. Thereby, in combination with the bearing on the axle bed, the pinion on second section of the counter shaft and the compensating gears were in direct and uniform contact, and there was no derangement of parts when one section of the counter shaft was deflected out of line in turning corners.

This unusual 12 H.P. Wood, Taber & Morse steam traction engine, built in 1888, is part of the collection of Greenfield Village and the Henry Ford Museum at Dearborn, Mich. This is a 12 H.P. reversible engine with the first practical four-wheel drive. The engine had the traction power practically and efficiently applied to the four wheels. And, while so applied to each wheel independently, the forward axle was under full control of the steering apparatus. The fascinating aspect of this engine is the train of open gears running the full length of the boiler.

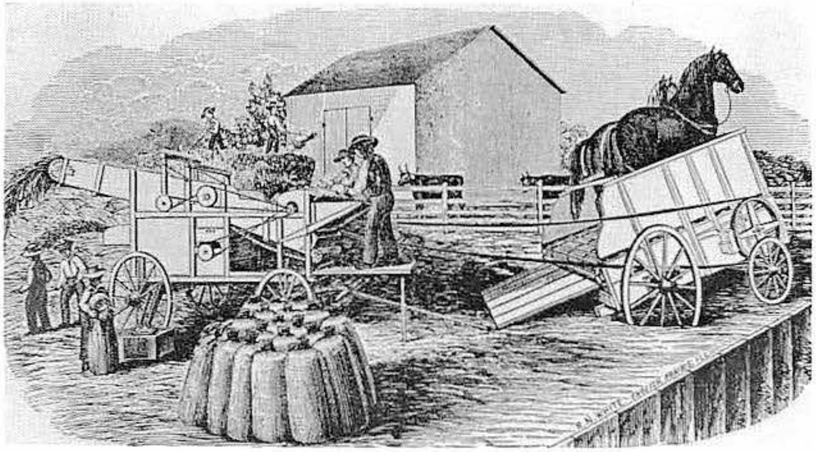


The 12 H.P. Wood, Taber & Morse steam traction engine was built by the Wood, Taber & Morse Co. of Eaton, N. Y., in 1885. It had a capacious firebox and wide spacing between the flues, which insured durability. The boiler had an extra large wrought iron dome. The double fire-door had an upper half sufficiently large for firing without opening the lower half, which held the fire from falling out. The lower part could be opened when needed to clean out the firebox or flues. The improved spark-arrester could also be opened when starting fire. Equipment included a driver's seat on springs; steam blower; belt for governor; wet down hose; balanced crank; extra long brass shaft bearings, and Dryfus automatic lubricator for the cylinder. The cylinder had a jacket to prevent condensation.



This is the 1887 model of the 12 H.P. Wood, Taber & Morse steam traction engine. This engine had the improved governor and patent speeder attachment, by which the speed of the engine could be varied 75 revolutions per minute, from 175 to 250 R.P.M., and the speed would remain at any desired R.P.M. between. This was done while the engine was running, without the use of weights, levers, springs, or without loosening set screws or check nuts, simply by turning a little crank which was within reach while standing on the ground. The engine's speed was at all times under positive control of the operator.

Threshers

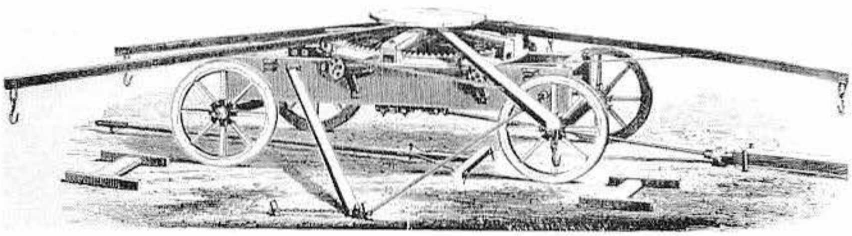


One of the earliest Case threshers, built about 1855, was said to have the capacity to thresh and clean from 200 to 300 bushels of wheat per day if properly powered and attended.

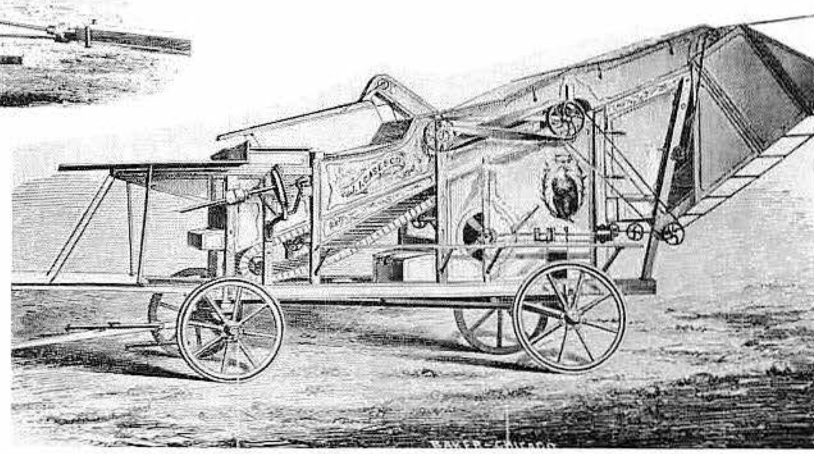
A significant improvement came in the 1850s, when the vibration, or shaker principle was employed to separate grain from the straw. This was the straw rack type of thresher which soon replaced the original apron type.

From that time on, improvements in threshers were essentially refinements–steel teeth, elevator stackers, grain weighers, self-feeders and band cutters, wind stackers and all-steel construction.

The early horsepowers–sweep and tread, or railway powers–gradually gave way to the steam engine (portable), and the steam traction engine. With the coming of the gasoline tractor shortly after 1900, steam engines began gradually to give way to this more convenient type of power.

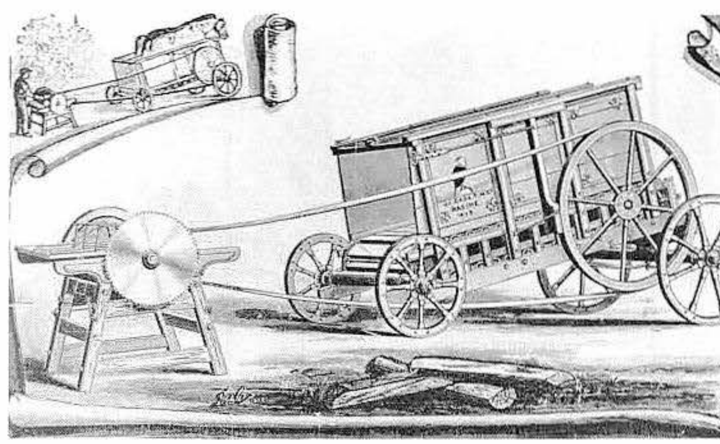


An early illustration of the Pitts 4-wheel sweep power as it appeared in an 1872 Case catalog. Case was licensed to build Woodbury and Pitts machines with improvements.



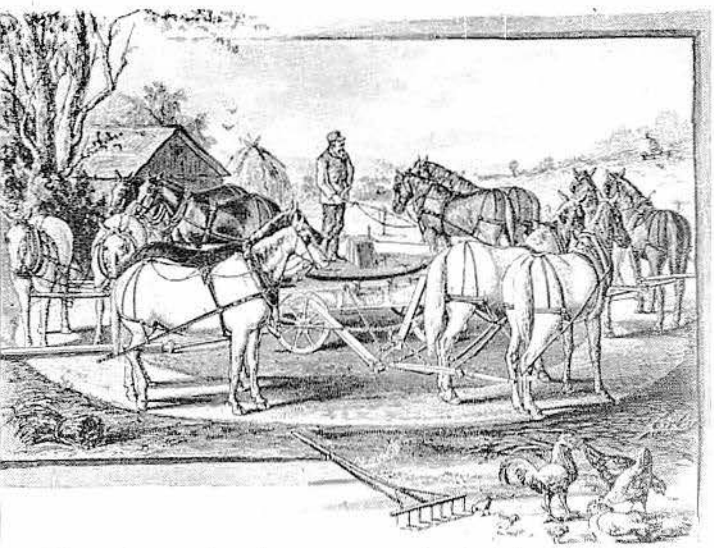
The Case apron type thresher as it appeared in the 1870 and later catalogs. This machine was driven by sweep (lever) power. This thresher was made of wood. Being founded upon the success and growth of threshing machines, the J. I. Case Co. in itself is a history of the thresher.

Elmer Lapp's Belgian runs a one horse tread mill built in 1881. It is belted to a ground hog thresher made in 1880. Lapp brings his six Belgians to the Rough & Tumble Engineers Historical Assn. show at Kinzer, Pa., every year. Power is supplied by the horse walking on web bottom to power a "groundhog" thresher. This 1881 machine only knocked the grain out of the grain heads–it did not separate it. Later, threshers were called separators when they incorporated a straw separating rack. Still, the grain had to be run through a fanning mill to be cleaned. Later, all these tasks were performed by one big threshing machine. A farmer need only to pitch bundles of grain into it, and the grain would come trickling out one spout while a blower would stack the straw. Steam power made larger machines possible.



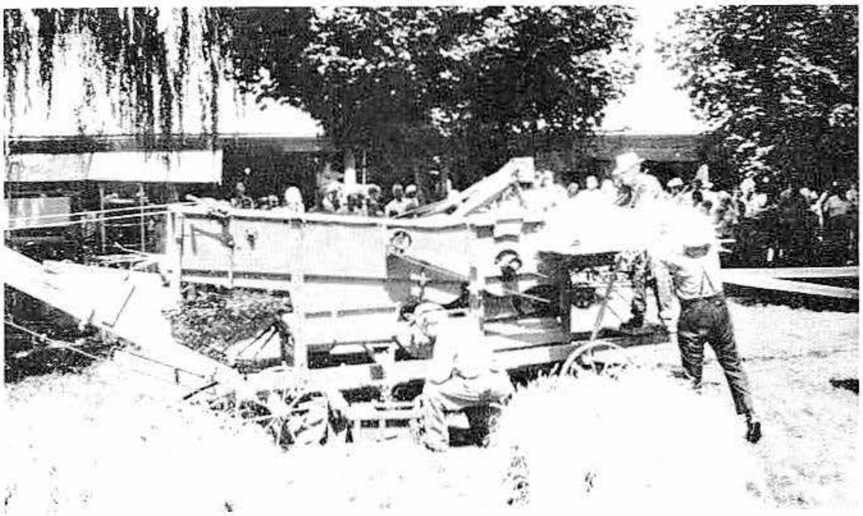
The Case 2-horse tread power was an ingenious device which took the motion of the tramping feet of animals and converted it into belt power for threshing machines, wood saws, and grinding.

Threshers

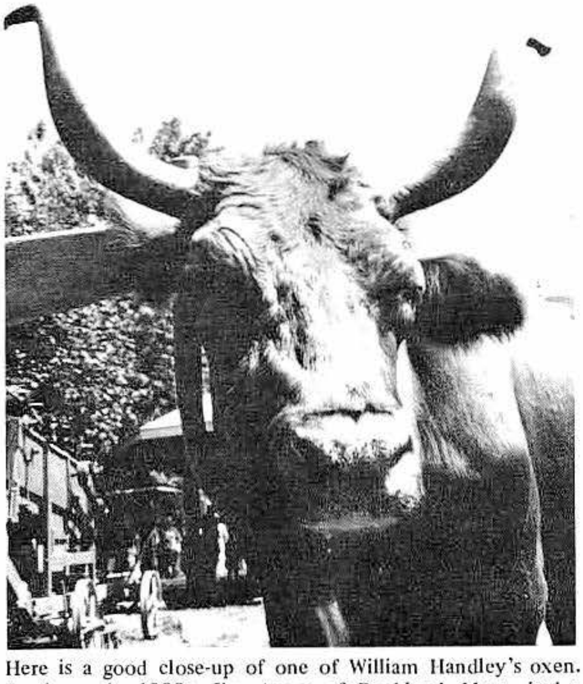


This wood engraving of a sweep power is a typical example of the fine artistry employed by the engravers of the period. Unlike many views in which animals appear, the horses in this illustration appear natural. Probably this engraving was copied from a photograph and given a few added touches for the surrounding atmosphere. This is a 6-team 12-horse sweep power.

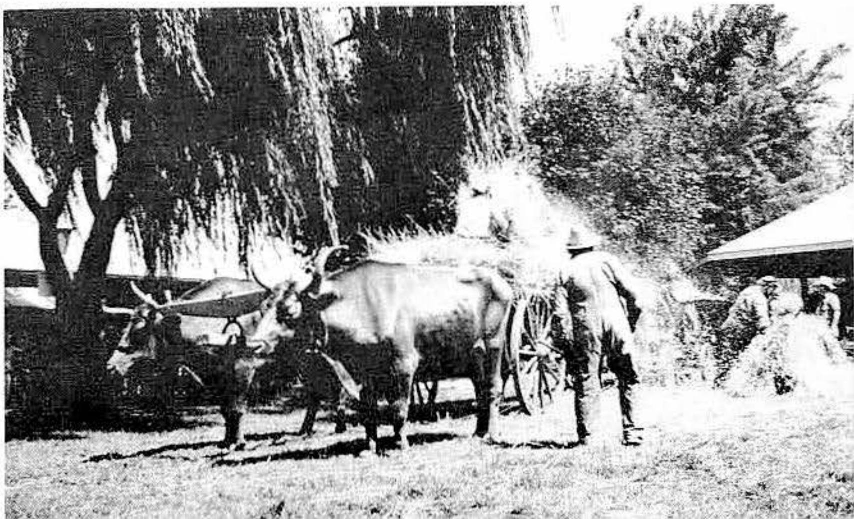
Elmer Lapp uses his four Belgians to operate a four-horse sweep power. The horses walk in a circle pulling on arms fastened to a central ring gear, turning a shaft with belt pulley to power the early model threshing machine. This sweep power is owned by Rough & Tumble Engineers Historical Assn., Kinzer, Pa. It was built in 1850 by S. B. Haines, Lancaster, Pa. The octagon building to house it was built by R. & T. group in 1968. By 1845 the new type thresher could thresh 20 to 25 bushels of wheat an hour with a four-man crew and six to eight horses on a sweep power. A larger model of 1860 was operated by eight horses and had a capacity of 300 bushels a day.



The Ellis Keystone Grain Thresher was built in Pottstown, Pa., about 1915 and restored in 1957. It was given to Rough & Tumble Engineers Historical Assn. by Mr. and Mrs. Percy F. Beck of Mechanicsburg, Pa. Elmer D. Lapp is using his four Belgian horses to operate a four-horse sweep power to run the Ellis Keystone Grain Thresher.



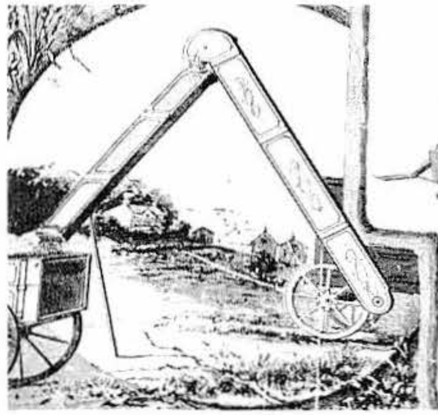
Here is a good close-up of one of William Handley's oxen. In the early 1900s, Jim Avery of Buckland, Mass., had a team of pure bred Holsteins oxen that weighed 8,600 lbs., bred on the noted stock farm of Wells Bros., Wethersfield, Conn. They were the finest yoke of mammoth matched oxen in the world at that time. They held the world's draft record of 11,284 pounds on a stoneboat. The oxen were named Mack and Teddy.

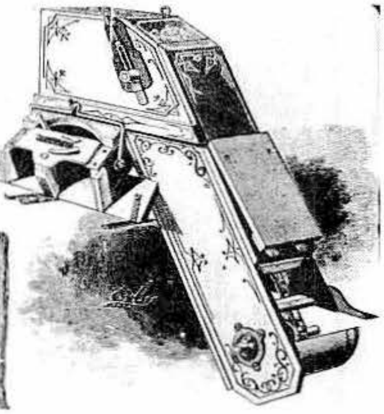


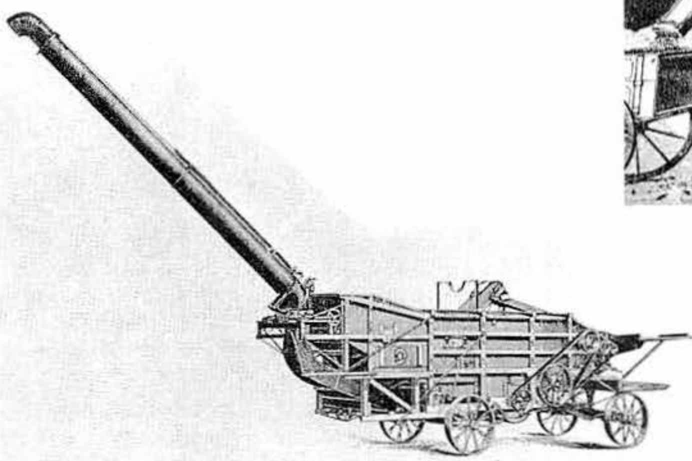
William M. Handley's yoke of oxen help with the threshing at Rough & Tumble Engineers Historical Assn. The oxen are of the Devon breed, 19 years old and about 1,600 lbs. William Handley lives in Cambridge, Md. The horses replaced the oxen as draft animals because they were faster and more intelligent.

Threshers

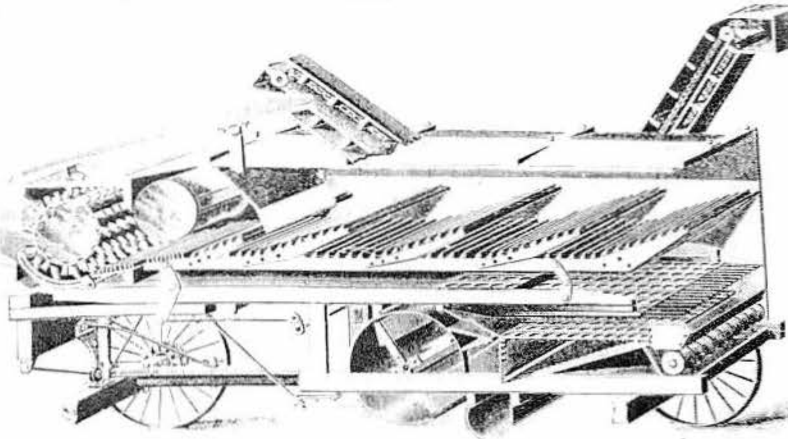
These two machines are a wagon elevator and bagger of 1886. The swinging spout of the elevator could be turned in any direction and pointed high or low. The short bagger with tallier could be used to fill bags or empty into baskets. This wagon elevator and bagger were built by the J. I. Case Co.



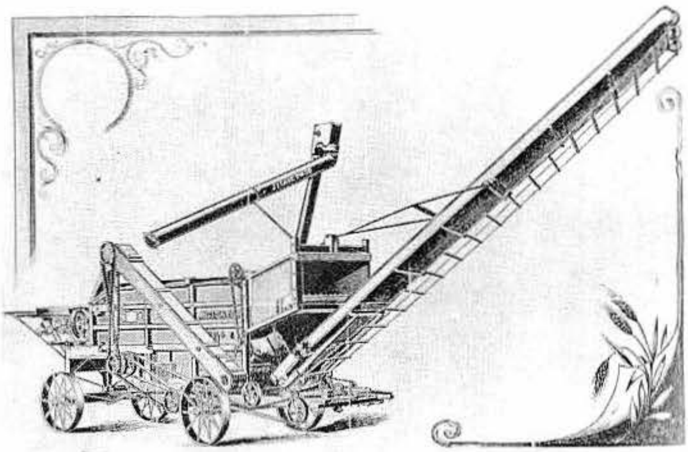




The Farmer's Friend was a gear-driven wind stacker which became recognized as a necessity. It was listed in J. I. Case Co. catalogs near the turn of the century.

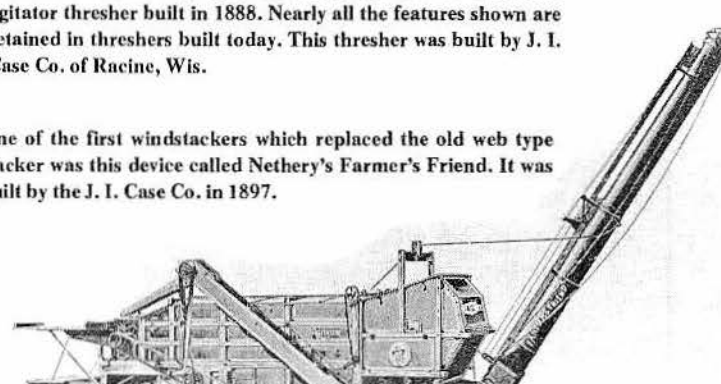


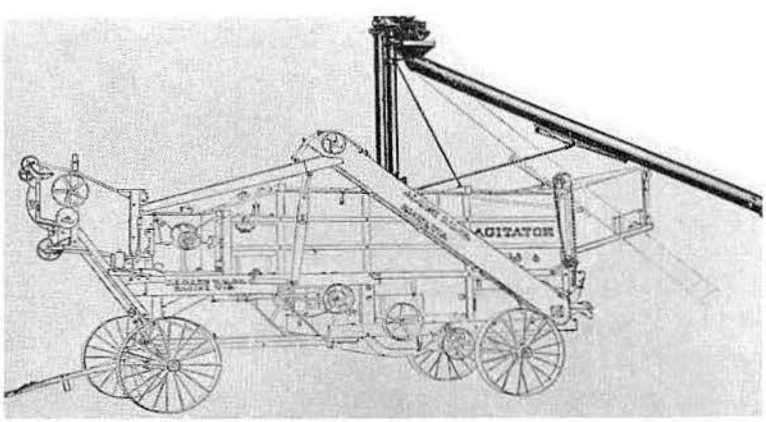
This is a remarkably good sectional view of the Ironsides agitator thresher built in 1888. Nearly all the features shown are retained in threshers built today. This thresher was built by J. I. Case Co. of Racine, Wis.



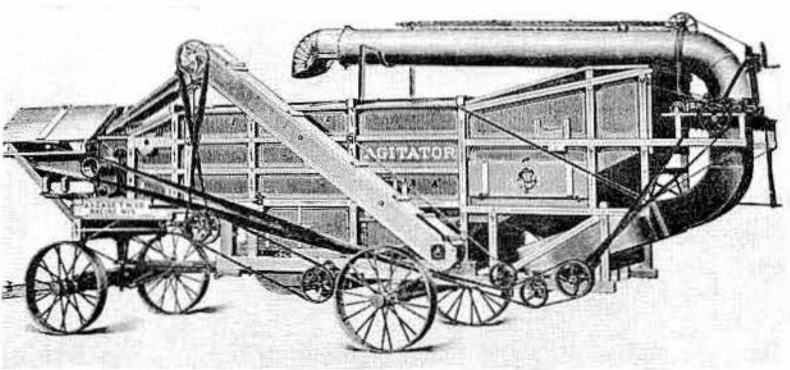
This agitator thresher machine was a favorite in the northwest. It was sold in the late 1880s and early 1890s. Note the high grain elevator and swinging straw stacker. This thresher was built by the J. I. Case Co.

One of the first windstackers which replaced the old web type stacker was this device called Nethery's Farmer's Friend. It was built by the J. I. Case Co. in 1897.



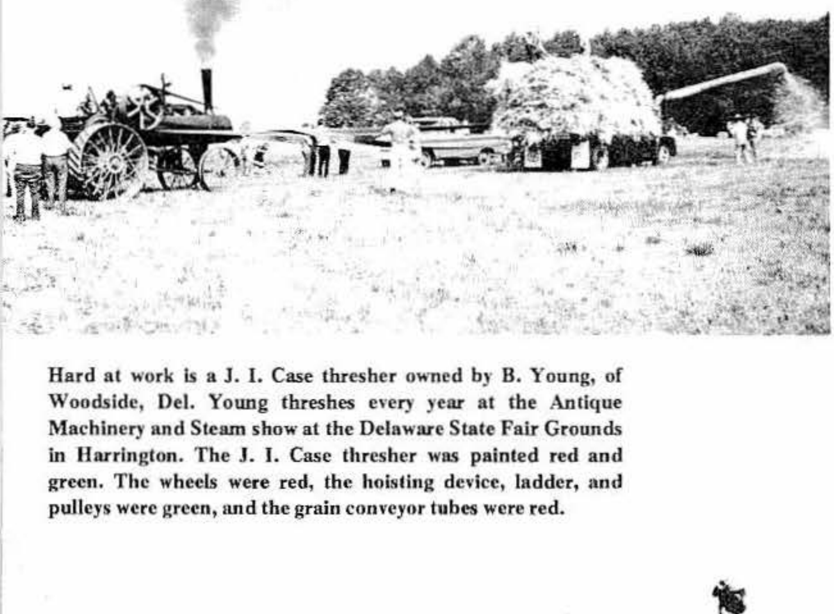


The Case Double-Tube Dakota Weigher of 1899 was made to meet the demands of the northwest where high grain tanks were used, and grain was sometimes delivered directly from machine to bin.

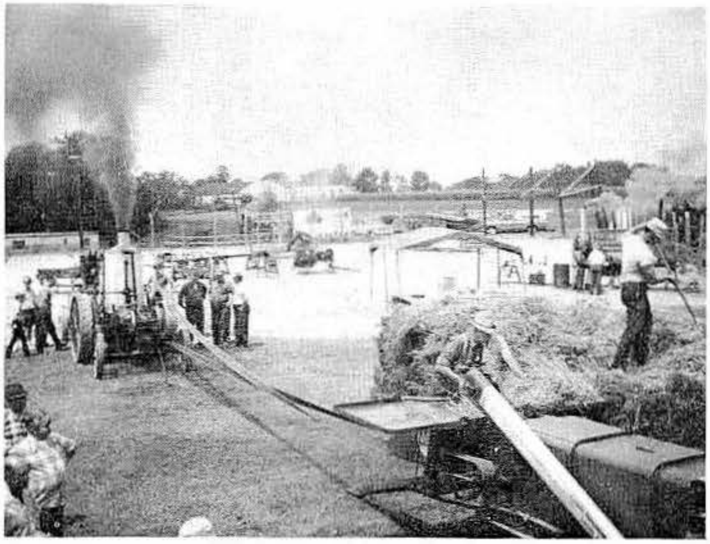


Another early windstacker which was available on J. I. Case threshers. Here it is appearing on an 1899 agitator, with practically all the adjustments of today's windstackers.

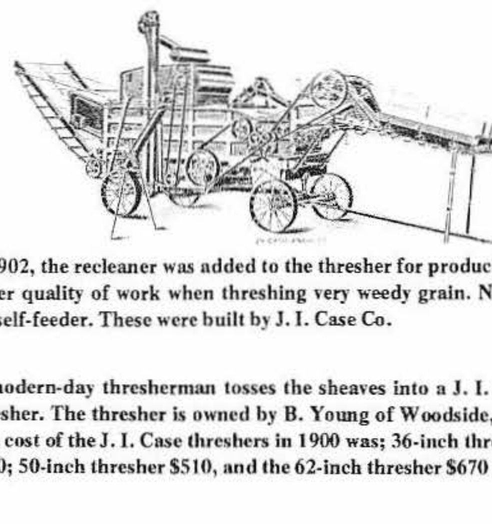
Lavern Ott of Howell, Mich. is running a J. I. Case thresher with his 12 H.P. J. I. Case steam traction engine. This scene took place at the Michigan Steam Engine & Threshers show at Mason, Mich. Ott's engine was built in 1916. It was a fact that practically all the grain was pounded out of the straw before it reached the straw rack. The few kernels still remaining were shaken out by the fish backs and risers on the straw rack before the straw finally reached the end of the rack where it fell into the stacker. Over 90% of the grain was separated at the cylinder in a Case steel threshing machine.



Hard at work is a J. I. Case thresher owned by B. Young, of Woodside, Del. Young threshes every year at the Antique Machinery and Steam show at the Delaware State Fair Grounds in Harrington. The J. I. Case thresher was painted red and green. The wheels were red, the hoisting device, ladder, and pulleys were green, and the grain conveyor tubes were red.



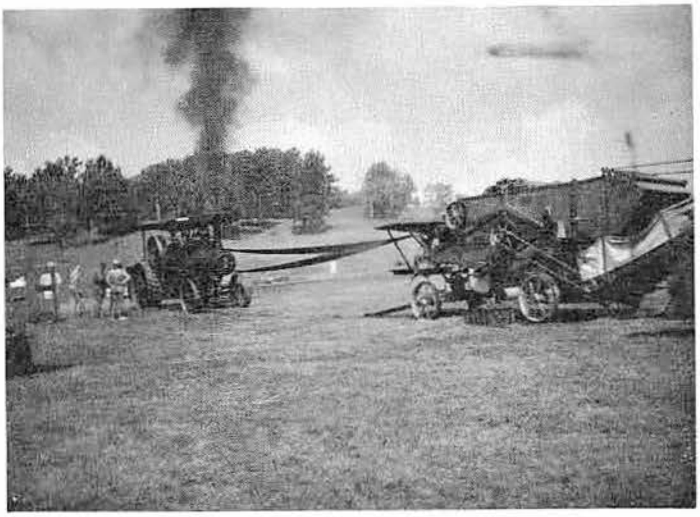
Morgan Hill is running a J. I. Case thresher with his 10 H.P. Westinghouse steam traction engine built in 1895. Hill lives in Linesville, Pa.The fundamental strength and durability of the J. I. Case threshing machine was its frame. The main sills were heavy steel channels, thus giving a good support for the other structural parts. The tires were wide enough to carry the thresher machine over the softest ground, and also afford a substantial base for the entire threshing machine when in operation. The hubs were long. The steel axles were designed against breakage. Each machine was equipped with a spliced tongue, doubletrees, and neck-yoke.



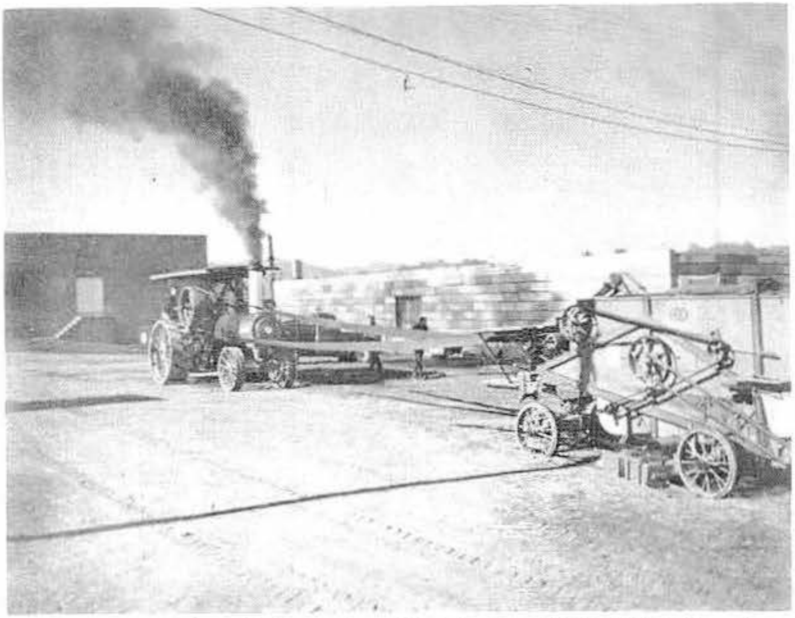
In 1902, the recleaner was added to the thresher for producing a better quality of work when threshing very weedy grain. Notice the self-feeder. These were built by J. I. Case Co.

A modern-day thresherman tosses the sheaves into a J. I. Case thresher. The thresher is owned by B. Young of Woodside, Del. The cost of the J. I. Case threshers in 1900 was; 36-inch thresher \$400; 50-inch thresher \$510, and the 62-inch thresher \$670 new.

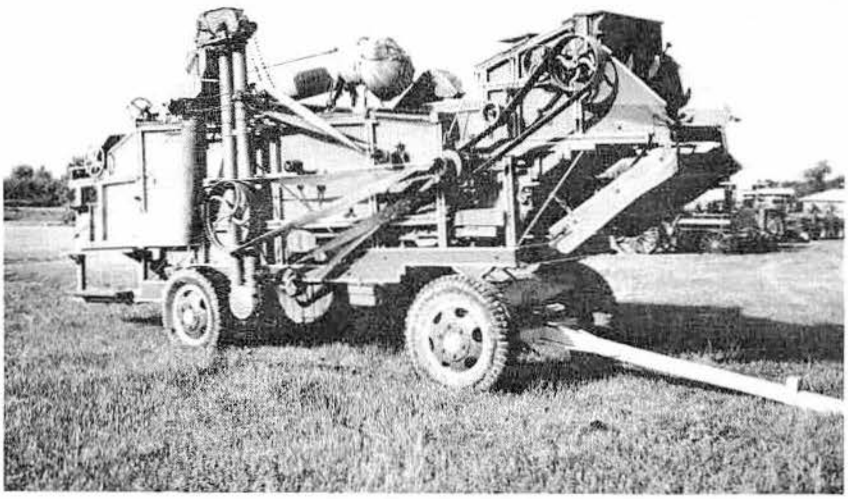
Threshers



Paul F. Crow is running a Frick thresher with his 18 H.P. Case steam traction engine built in 1916. Crow lives in Charleroi, Pa. He participates in the Tri-State Historical Steam Engine show at Hookstown, Pa. The Frick thresher is owned by Mrs. Mary Weaver. From 1857 to 1865 George Frick built threshers on the patents of Peter Geiser.



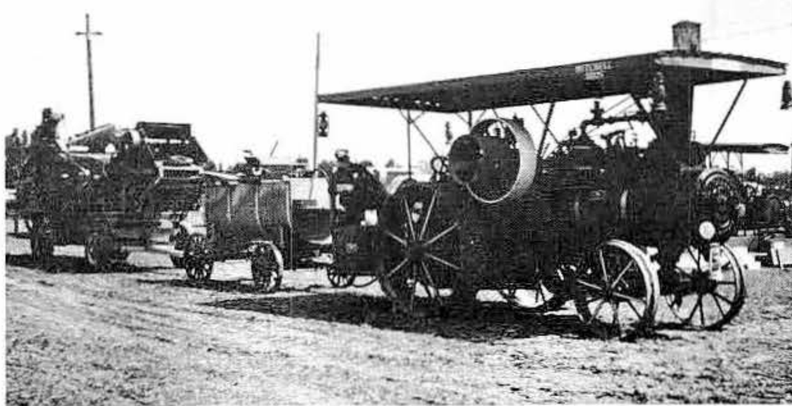
Willis Abel is running a Frick thresher with his 25 H.P. Russell steam traction engine built in 1920. Abel lives in Finleyville, Pa. This scene took place at the Tri-State Historical Steam Engine Assn. show at Hookstown, Pa. The Frick thresher is owned by Mrs. Mary Weaver.



This is a John Goodison thresher built in 1923. It is Number 3650, Jumbo. It is owned by Lyman Mitchell & Sons of Clear Creek, Ontario, and appears at the Norwich and District Historical Society show in Norwich, Ontario.

Glenn Fullerton's 20 H.P. J. I. Case steam traction engine, built in 1923, is running a Huber 30 x 50 machine. The Huber thresher is owned by Jim Fisher of Scio, Ohio. This took place at the Stumptown Steam Threshers Assn. show at New Athens, Ohio. Glénn Fullerton lives in Burgettstown, Pa.

Lyman Mitchell & Sons' George White & Son 25 H.P. steam traction engine, built in 1926, is pulling his water wagon and his John Goodison thresher, built in 1923, at the Norwich and District Historical Society show in Norwich, Ontario. In the mid-1920s, scenes of this type were common in grain growing sections of Canada and the U. S.



Threshers

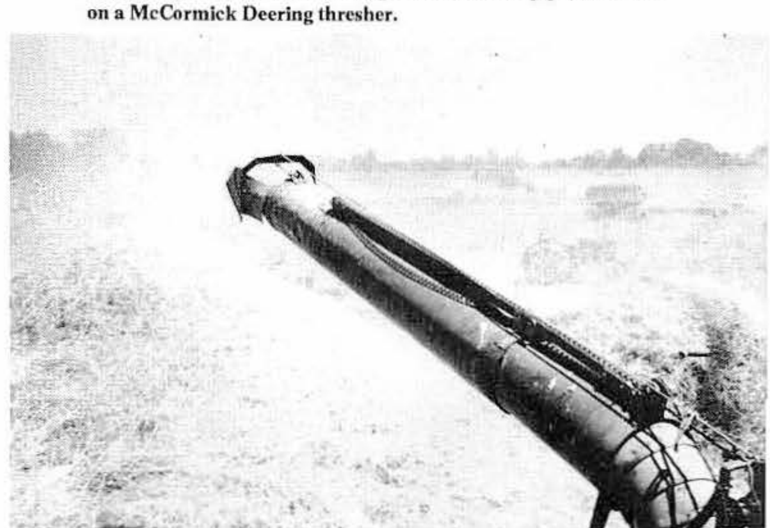
Here is an unusual angle view of Donald Hager's 16 H.P. Frick steam traction engine, built in 1916, running a New Huber thresher, built in 1930. Donald Hager lives in Meadville, Pa. This took place at the Pioneer Steam and Gas Engine Society of Northwest Pa. show at Meadville, Pa.

John McDowell's 21 H.P. A. D. Baker steam traction engine, built in 1922, is running a Huber thresher 30 x 50 machine. The Huber thresher is owned by Jim Fisher of Scio, Ohio. This scene also occurred at the Stumptown Steam Threshers Assn. show at New Athens, Ohio. John McDowell lives in Plainfield, Ohio.

Herman Walcott's 50 H.P. Peerless steam traction engine, built in 1923, is running a McCormick Deering thresher built in 1927. The thresher is owned by Claude Scholma of Allendale, Mich. The scene took place at the River Bend Steam & Gas Assn. show at Allendale. Transferring power from the steam traction engine to the threshing machine was the job of the belt. There was something almost hypnotic about watching the belt make its endless rounds from steam traction engine to separator and back again. It flapped and danced about three feet above the ground and served as an umbilical cord bringing life to the separator. The following is a list of companies that made belts for farm use: Peerless Belting Co., Buffalo, N. Y.; W. H. Salisbury & Co., Chicago, Ill.; The Hettrick Mfg. Co., Toledo, Ohio; J. W. Curry Co., Cincinnati, Ohio; Sawyer Belting Co., East Cambridge, Mass.; Main Belting Mfg. Co., Chicago, Ill.; The Gandy Belting Co., Baltimore, Md., and the Chesapeake Belting Co., Baltimore. This is a list of only the major companies.

Philip Deeds 20 H.P. Advance Rumely steam traction engine, built in 1922, is running a Huber thresher built in 1927. The Huber thresher is owned by Milton Deets. Philip Deeds lives in Lancaster, Ohio. This took place at the Miami Valley Steam Threshers Assn. show at London, Ohio. The Huber thresher machine used an automatic belt tightener.

Here is a good view of the telescopic wind stacker pipe, mounted on a McCormick Deering thresher.



Threshers

Here is a thresherman's view of the A.W. Stevens & Son 9 H.P. steam traction engine built in 1890 and owned by Ira Prickett of Mount Pleasant, Iowa. Standing by the engine is Neil McClure of Colchester, Ill. This engine has a 6½-inch and a 9-inch stroke, and an Arnold reversible gear. It has 33 2-inch flues, and works at 125 lbs. PSI and 250 RPM. Ira Prickett was threshing at the age of 16 in Canada. He bought the engine new for $900. The engine is No. 1774.

J. Crowe's 25 H.P. Russell steam traction engine, built in 1919, is running a Russell thresher owned by The Tuscarawas Valley Pioneer Power Assn. of Dover, Ohio. This Russell threshed wheat and oats. With special attachments it could thresh rice, clover, peas and other grains and seeds. All belts and tools were furnished with the New Russell thresher. The New Russell was painted orange red with yellow stripping. The wheels were yellow.

Threshing with a Red River Special (Oliver) thresher, built in 1940, and owned by Tom Rosema of Allendale, Mich. This took place at the River Bend Steam & Gas Assn. show at Allendale, Mich. The belt transfers power from the steam traction engine to the thresher. There were several different ways to fasten the ends of a leather belt together: For example, lacing, gluing, and by the use of metallic fasteners. All of these methods were in common use and all of them were satisfactory under certain conditions. Lacing was used more widely than any other method, principally for the reason that it was the most convenient and easiest method. The Clipper Belt Lacer Co. of Grand Rapids, Mich., made and sold a lacing outfit that consists of lacer, hooks and pins, all ready for use. Another well known lacing was the Alligator Steel Belt lacing. When a belt started to slip, a belt dressing was used. C. E. Scanlon Co. of Joliet, Ill., made a dressing called Bigstick.

Large plastic panels give an inside look into a Canadian made thresher, the Lion. This thresher is on display at the Ontario Steam & Antique Preservers Assn. show at Milton, Ontario. The thresher was built by Lobsinger Bros., Ontario, Canada.

Jim Carney's 24 H.P. Robert Bell steam traction engine, built in 1922, is running a International Harvester thresher at the Ontario Steam & Antique Preservers Assn. show at Milton, Ontario.

Balers

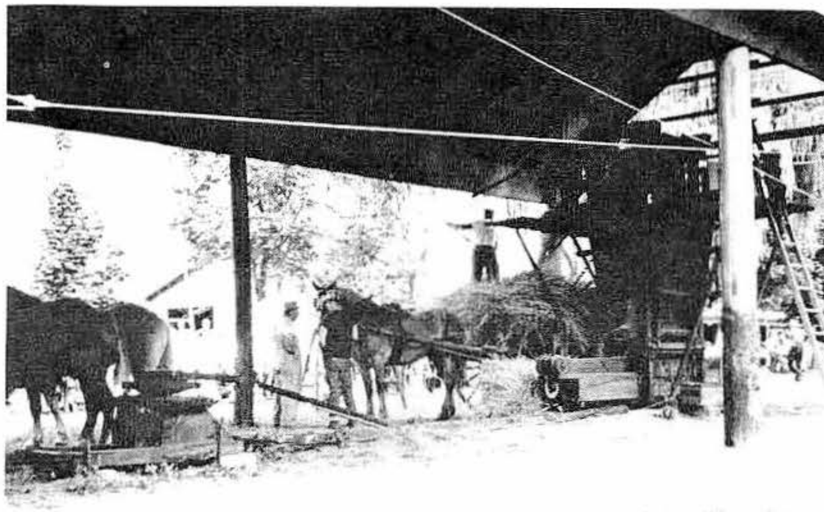
An early baling press was first manufactured in 1853. This press required two men and a horse to operate and made five bales of 250 pounds each in an hour.

The first continuous hay press was invented in 1872. Steam power presses came into general use about 1884. Cities with their large horse population furnished an important market for hay in those days, and during the 1890s when the railroads refused to handle bulk hay, baling presses came into their own. Then came the belt power baler. The steam traction engine would supply the power to run the balers.

A good example of the average baler is the Peerless, which made a square and a heavy bale, permitting the loading of full weight in car and the saving of freight, which was quite an item. Only 6 to 10 H.P. was needed to operate a Peerless baler. The baler came in two sizes, making 14 x 18 or 17 x 22 inch bales.

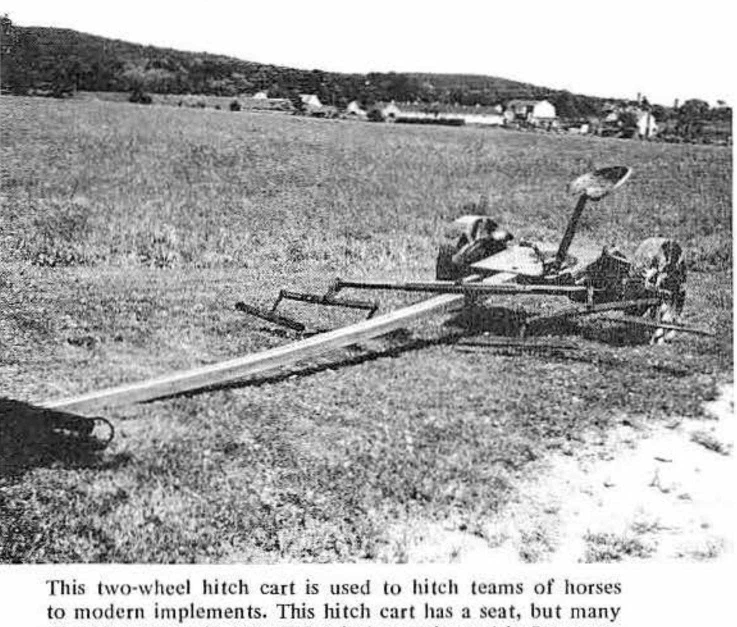
The baler's frame was of steel, the strain was evenly distributed, bearings were rigid, of proper size for strength, and could not get out of line. The feed table was supported by a bale chamber, with no props required. It was built a medium height from ground, which added to the ease of the work of tying the wire and pitching the hay onto the feeder platform. The principles of operation of the feeder were altogether different from the feeders of other presses. On the Peerless, the feeder was operated by a swinging link motion, in a perfectly timed and noiseless way. The press could be run to a very high speed and the feeder would work entirely free from jar and vibration.

The folder worked splendidly and the bales from the press were smooth and even.



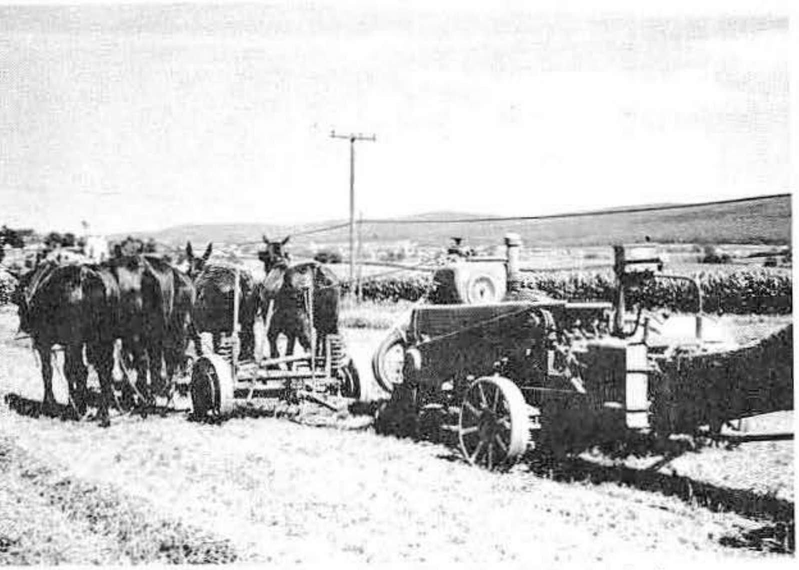
A pair of Belgian horses works the horse powered jump press hay baler. The baler, made in 1900, is owned by Elias Beiler and Amos Stauffer. It is kept at Rough and Tumble Engineers Historical Assn., Kinzer, Pa. An early baling press was manufactured in 1853. This press required two men and a horse to operate and made five bales of 250 pounds each in an hour. The first continuous hay press was invented in 1872. Steam presses came into general use about 1884. Cities, with their large horse populations, furnished an important market for hay in those days, and during the 1890's when the railroads refused to handle bulk hay, baling presses came into their own. Then came the belt power baler. The steam traction engine would supply the power to run the balers using a belt.

Baling with three mules and one horse. The baler is an International Harvester, being used in Lancaster County, Pa. Here they are using the old and the new to make hay. The field baler began to attract attention in 1932. For those who were already using baled hay or straw, the pickup baler saved at least two handlings of the crop, which in itself was an important contribution. But beyond that, this convenient method of packaging and storing hay appealed to many farmers who had never before been interested in baling. The baling idea caught on immediately and spread rapidly. As a result, field balers, despite their relative newness, have ranked among the most sought-after machines.



This two-wheel hitch cart is used to hitch teams of horses to modern implements. This hitch cart has a seat, but many of them today do not. This hitch cart is used in Lancaster County, Pa.

Balers

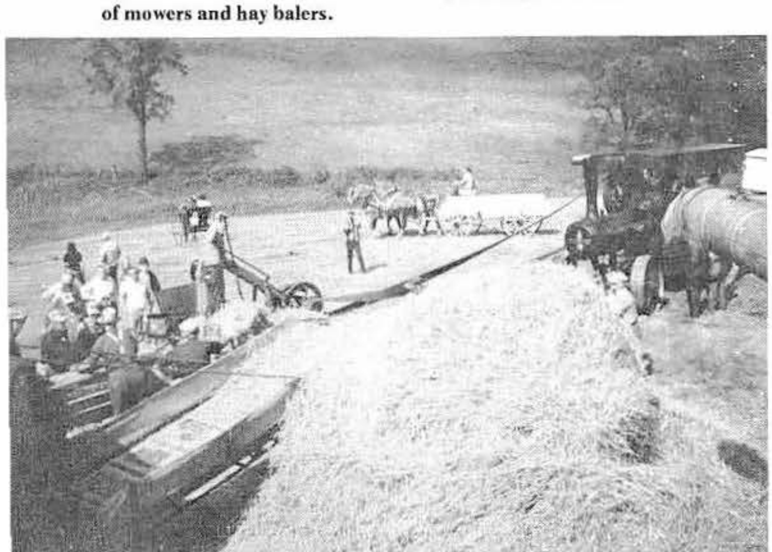


Three horses and two mules pull a New Holland baler in Lancaster County, Pa. Here the old and the new are used to make hay. Field baling saves handling loose hay and makes a handy package for storage and feeding.

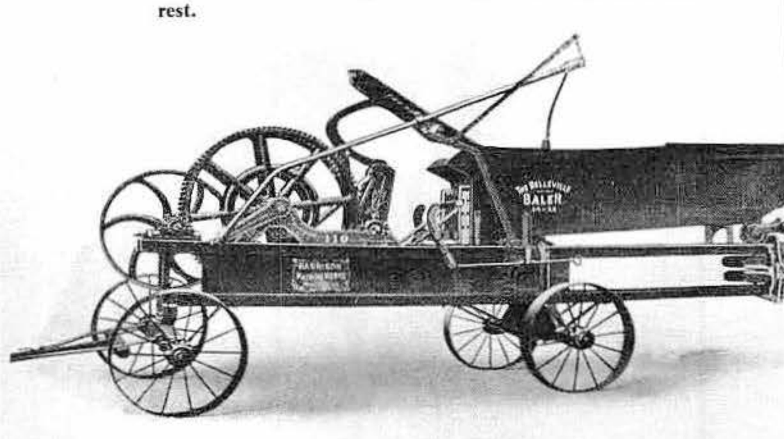
H. Lester Lee's 16 H.P. Russell, built in 1922, is running an Ann Arbor baler. The baler is owned by R. Kaste. Lee lives in Cross Creek, Pa. The baling is being done at the Tri-State Historical Steam Engine Assn. show at Hookstown, Pa. This baler had the new patented automatic self-feeder, automatic safety slip flywheels and new patented block dropper.

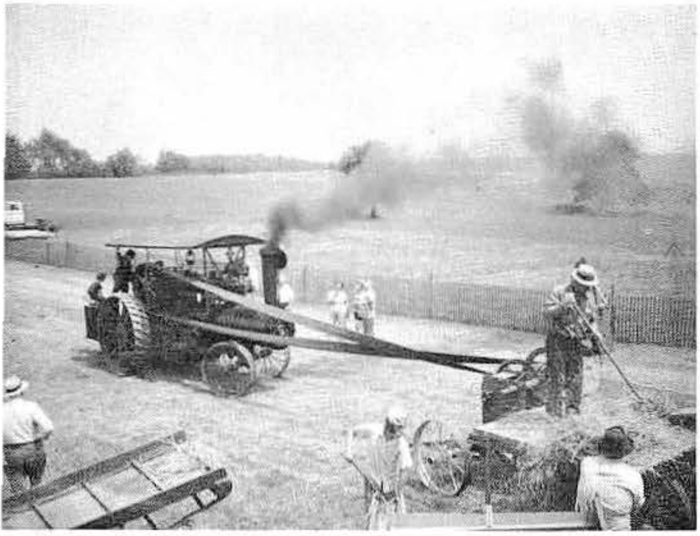
A mixed team of one horse and one mule brings the baled hay to the barn. Among the companion machines of the baler were field bale loaders and elevators for use at the barn to reduce hand lifting.

Paul F. Crow's 18 H.P. J. I. Case steam traction engine, built in 1916, is running an Ann Arbor baler owned by R. Kaste. Paul Crow lives in Charleroi, Pa. This baling also took place at the Tri-State Historical Steam Engine show. In 1943, the Oliver Co. acquired the Ann Arbor Machine Co., which gave Oliver a line of mowers and hay balers.

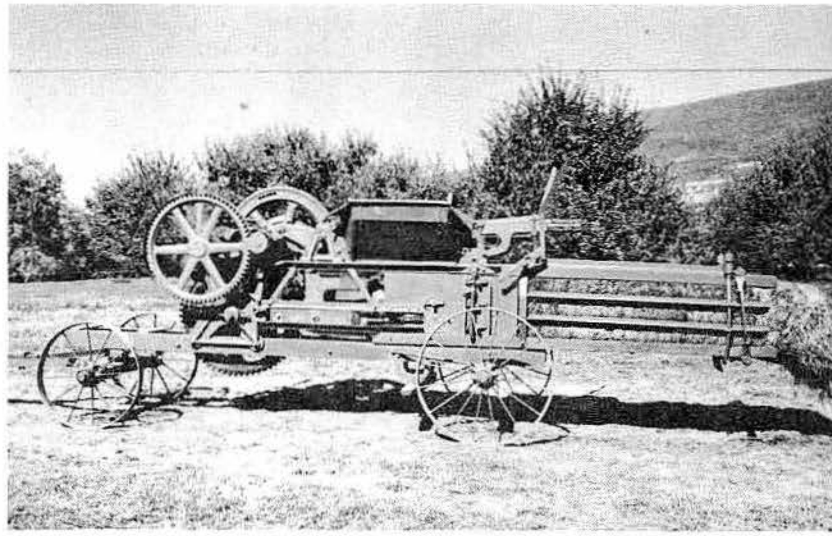


The Belleville self-feeding baler was built by the Harrison Machine Works of Belleville, Ill. The baler is a belt power press, built in two convenient sizes of 16 x 18 inches and 17 x 22 inches. It operated at a very low speed, and was equipped with a patented self-feeding device. The frame and baling chamber were built of angle irons and steel plates riveted together, forming a rigid body, which was mounted on a substantial truck equipped with steel wheels, having a standard tread. Four-inch face wheels were regularly furnished, but six-inch face wheels could be supplied on special order. A heavy pillow block secured to the body supported the driving mechanism, which was very simple and strong. The power was transmitted from the flywheel, which operated at 185 R.P.M., through a set of double pinions which drove the twin master gears. The operation of the baler did the rest.



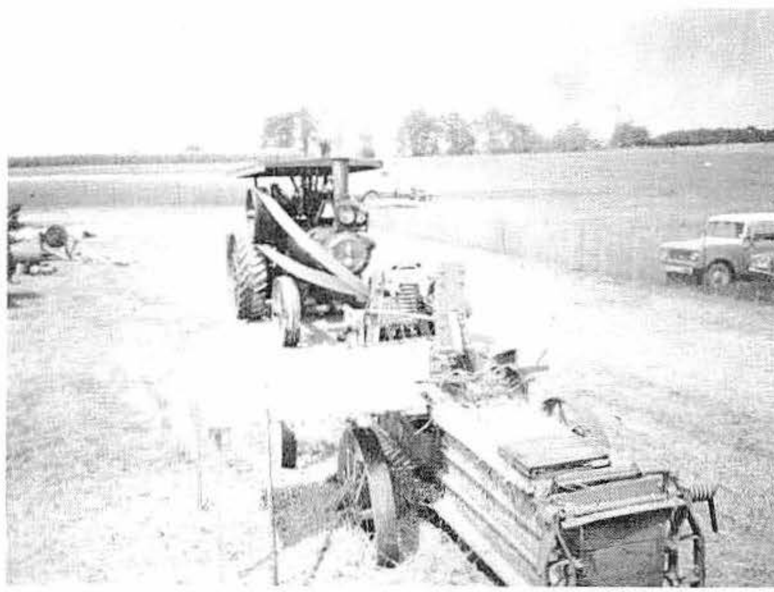


Paul Shetler's 14 H.P. Frick steam traction engine, built in 1917, is running a Case baler. The baler is owned by Harold Bupp. Paul Shetler lives in Enon Valley, Pa. This scene occurred at the Northwestern Pennsylvania Steam Engine and Old Equipment Assn. show at Portersville, Pa. J. I. Case balers were built in two sizes, 14 x 18 inches and 17 x 22 inches. The former had a capacity of 3 to 4 tons per hour, and the latter 3½ to 5 tons per hour. They were constructed entirely of steel, with the exception of the feeding table, which was made of wood. Case balers were equipped with top, bottom and spring side tensions, by which bales of any desired weight could be made.

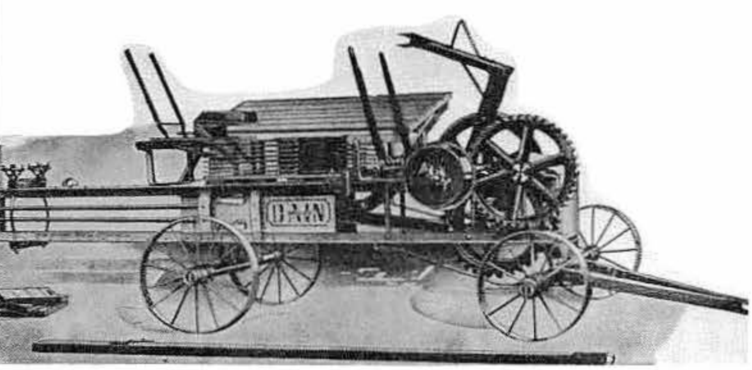


This is a International Harvester baler built in 1908. It is owned by Mr. Smith of Martinsburg, Pa. It is on display at the Morrison Cove Pioneer Power reunion at Martinsburg.

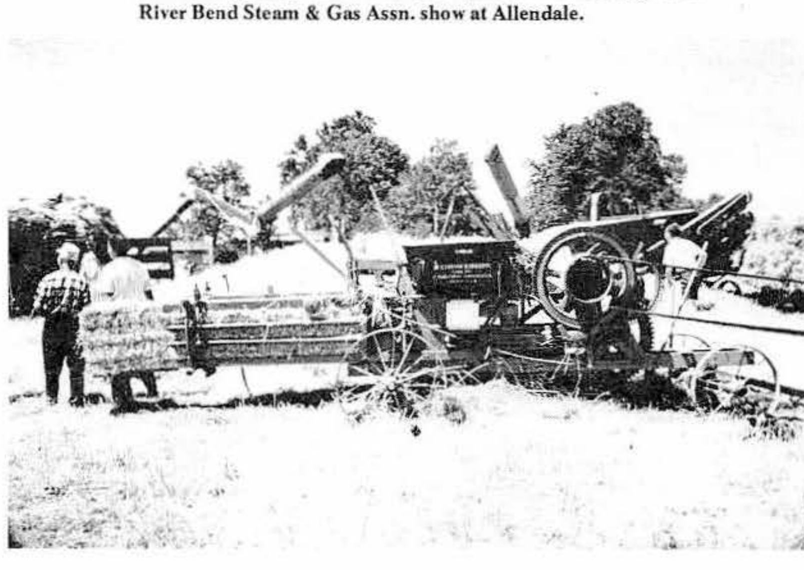
Charles McMurray's 50 H.P. J. I. Case steam traction engine is running a J. I. Case baler owned by Harold Bupp. McMurray lives in Slippery Rock, Pa. The bearings on all J. I. Case balers were carried on a heavy steel plate which prevented the gears from spreading or getting out of mesh. Openings were provided in the bale chambers to let out all chaff and seeds, and make clean-looking bales. A belt power baling press with a chamber 14 x 18 inches cost $410 and a 17 x 22-inch model cost $450 when new.



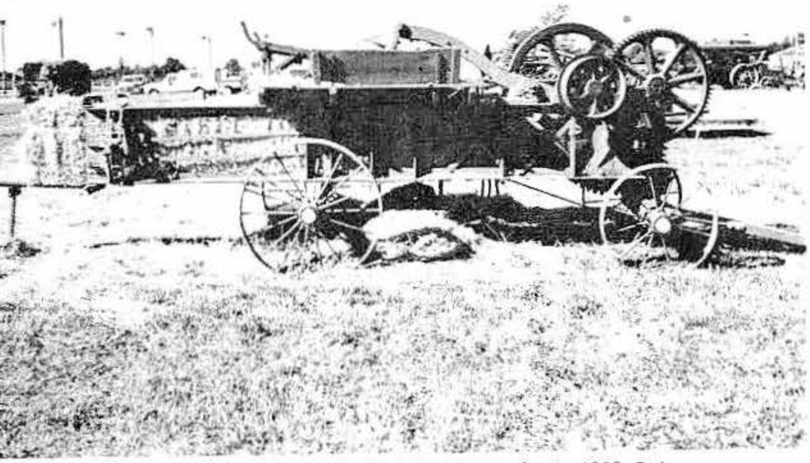
This is a International Harvester wire-tie baler built in 1921. It is owned by Claude Scholma of Allendale, Mich. International Harvester painted the balers red. This one is working at the River Bend Steam & Gas Assn. show at Allendale.



The Dain belt press baler was built in 1912 in Ottumwa, Iowa, for the John Deere Plow Co. of Moline, Ill. It had an automatic tucker which positively folded the over feed, making smooth bales. The bale chamber had top tension, compressing bales the wide way. Division blocks were easy to locate, and there was no danger of tying the blocks in the bales.

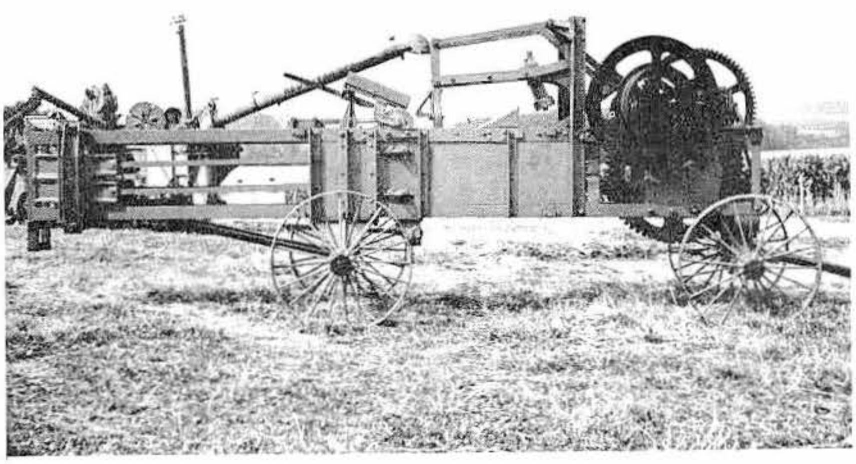


Balers



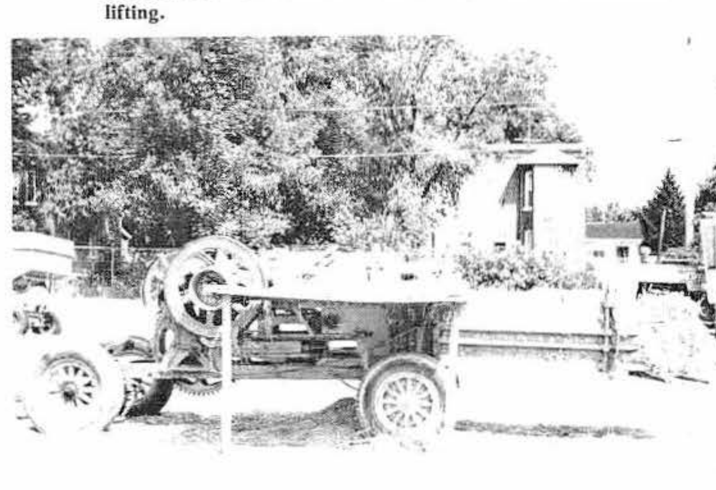
This baler was made by the Ohio Cultivator Co. in 1908. It is owned by Wilbert Greene of Jamestown, Pa., and is on display at the Pioneer Steam and Gas Engine Society of Northwest Pa. In the 1890s, when the railroads refused to handle bulk hay, baling became part of farming.

Elmer K. Wenger's 12 H.P. Russell steam traction engine, built in 1916, is running a John Deere hand feed hay baler built in 1937. The baler is owned by the Ault brothers who live in Mineral City, Ohio. Wenger lives in Dalton, Ohio. This baling took place at the Tuscarawas Valley Pioneer Power Assn. show at Dover, Ohio. John Deere painted its balers green.

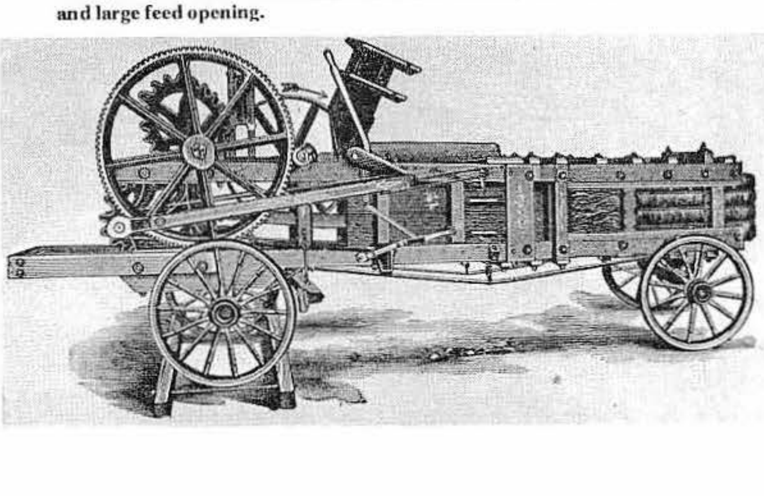


This Peerless hay press baler goes into action at the Early American Steam Engine Society's show at Stewartstown, Pa. This baler made a square and a heavy bale, permitting the loading of full weight in car and the saving freight costs. A 6 to 10 H.P. steam traction engine would operate the baler according to the amount of work necessary. It came in two sizes, 14 x 18 and 17 x 22-inch. The frame was steel, the strain was evenly distributed, and the bearings were rigid and of proper size for strength. It could not get out of line. The feed table was supported by the bale chamber, with no props required. It was built medium high from the ground, which added to the ease of the work of tying the wire and pitching the hay on the feeder platform.

This is the Ontario Steam and Antique Preservers Association's baler. The self-tying pickup baler came along in 1940. Since then there have been a number of new models using either twine or wire. Among the companion machines of the baler were field bale loaders and elevators for use at the barn to reduce hand lifting.



The Sandwich Steam Power Hay Press was built by the Sandwich Mfg. Co. of Sandwich, Ill., in 1902. Its capacity was 2 to 4 tons per hour. It had a strong, simple and effective self-feeder and large feed opening.



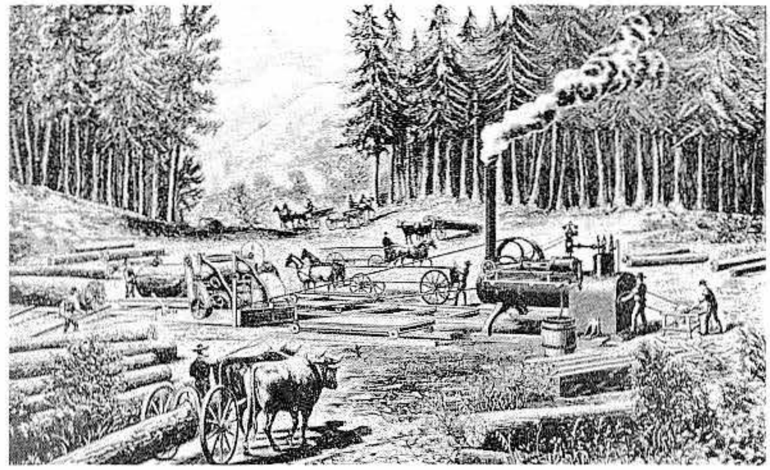
Saw Mills

A hard working steam traction engine and mill can cut about 5,000 feet or more of lumber per day. The portable sawmill was often moved to various sites to shorten the log haul. They operated economically where timber resources were thinner and more scattered. The steam traction engine could be moved with the sawmill to new cutting sites very easily.

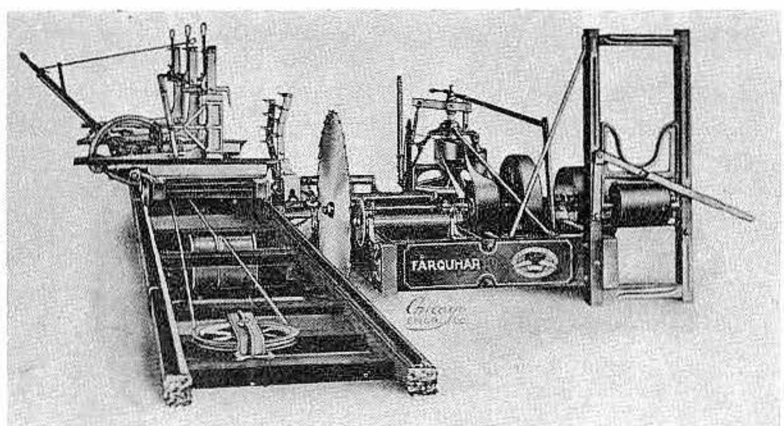
The sawmills vary widely in the efficiency with which they cut up logs into lumber. Some sawdust is inevitable. Slabs, edgings, and trim wastes vary widely in quantity, however, depending on logs being sawed, and the extent of the salvage operations.

The more efficient mills cut lumber accurately to size, reducing waste. With large logs, the proportion of slab and edging off is reduced. And at some mills, this slab material was cut into a great variety of secondary products and sold.

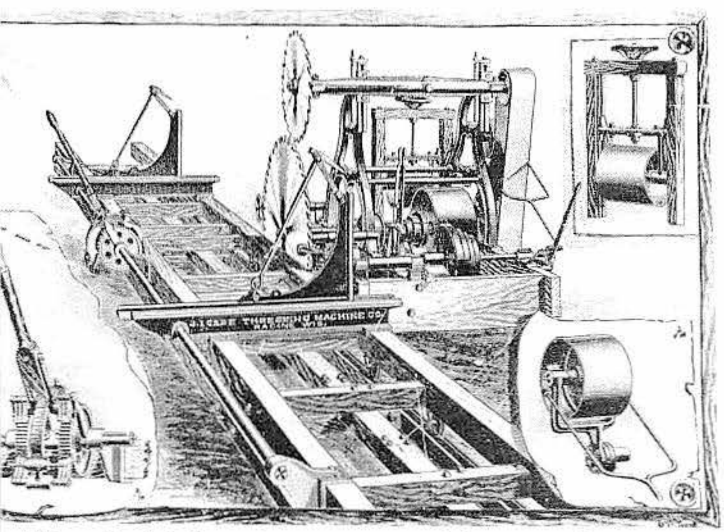
The shigle mills were moved from one site to another very easily. These mills were moved to where they were needed. Small portable steam engines and small traction engines supplied power to run them by belt, with only about 6 to 8 H.P. needed to run a shigle mill.



Sawmills were first shown in J. I. Case literature about 1882. This scene has the qualities of action and rustic charm which would today be required of a well-photographed rural setting. The sawmill is being run by a portable steam engine on sills.

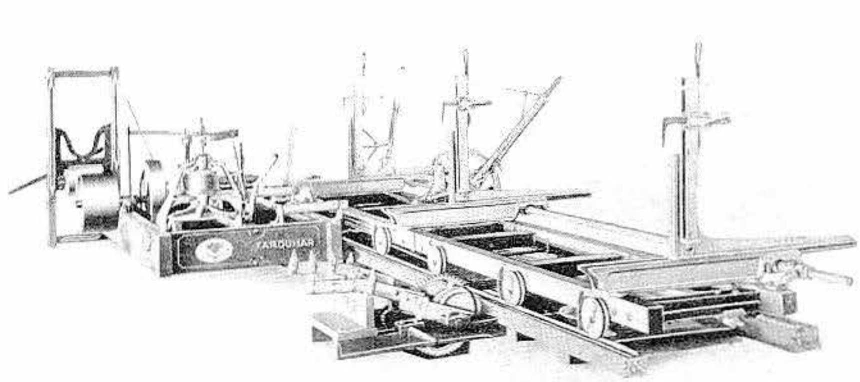


This Farquhar sawmill, with cable attachment, was pictured in a 1907 A. B. Farquhar Co. catalog. Farquhar was among the first to adopt this improvement on the mills. The cable attachment had the advantage of cutting a longer log with the same length of carriage.



This mechanical illustration was one more of the increasingly popular portable Case sawmills of the middle 80s, appearing in the 1884 and 1885 catalogs.

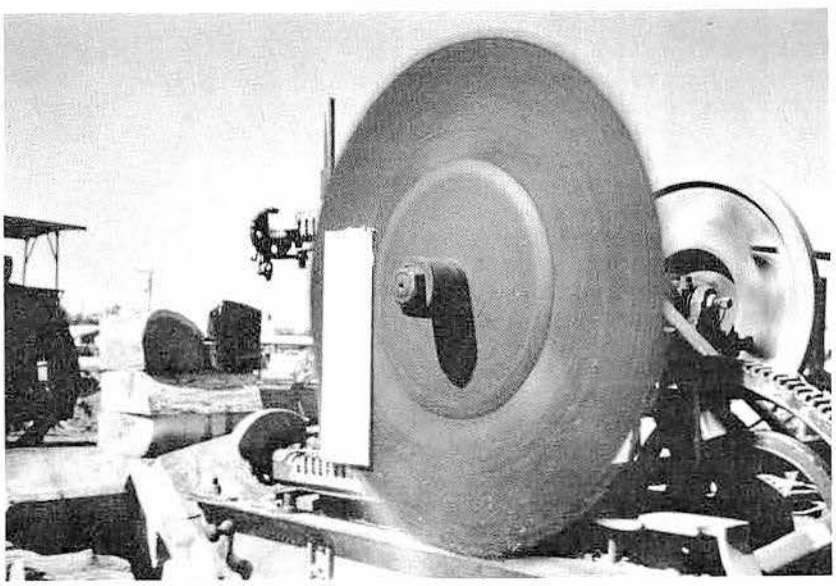
The Farquhar sawmill, with log turner attached, was offered in 1907 by A. B. Farquhar Co.



Saw Mills

Carl Campbell's 12 H.P. Frick steam traction engine, built in 1910, is running his shingle mill. Campbell lives in Mansfield, Pa. Art Taylor is at the throttle of Campbell's Frick and Carl is running the shingle mill built by Lyons Iron Works in 1890. This took place at the Old Stump Jumper show at Mansfield.

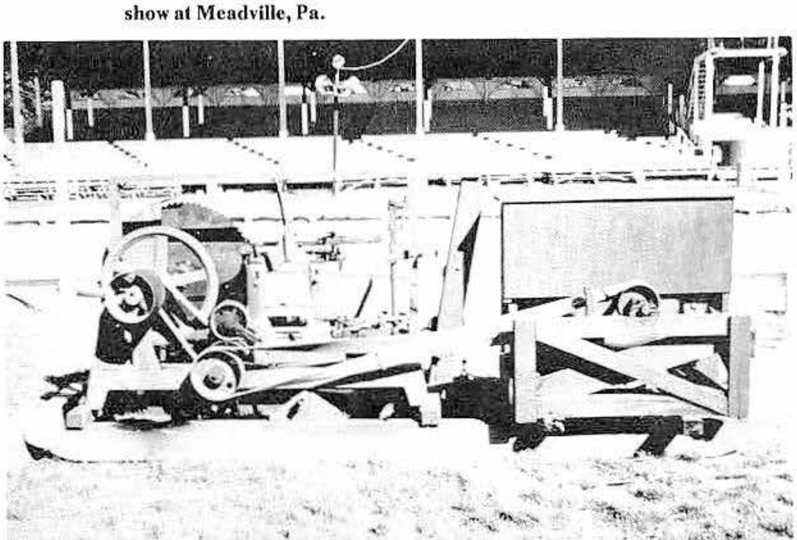
Verl Malone's 18 H.P. J. I. Case steam traction engine, built in 1917, is running the veneer mill. The veneer mill was made by George Mfg. Co. of Painesville, Ohio. This action occurred at the Richland County Steam Threshers Assn. show at Mansfield, Ohio.

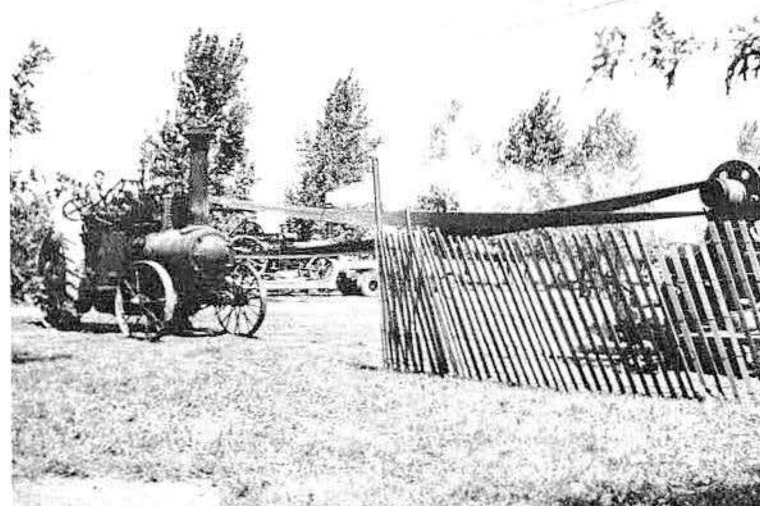


Ed Evan's shingle mill was built in 1910 by Chase Turbine Mfg. Co. of Orange, Mass., for general agent, Hench & Dromgold of York, Pa. Evans lives in Cheswold, Del. The mill is in action at the Antique Machinery and Steam show, Delaware State Fair Grounds, Harrington.

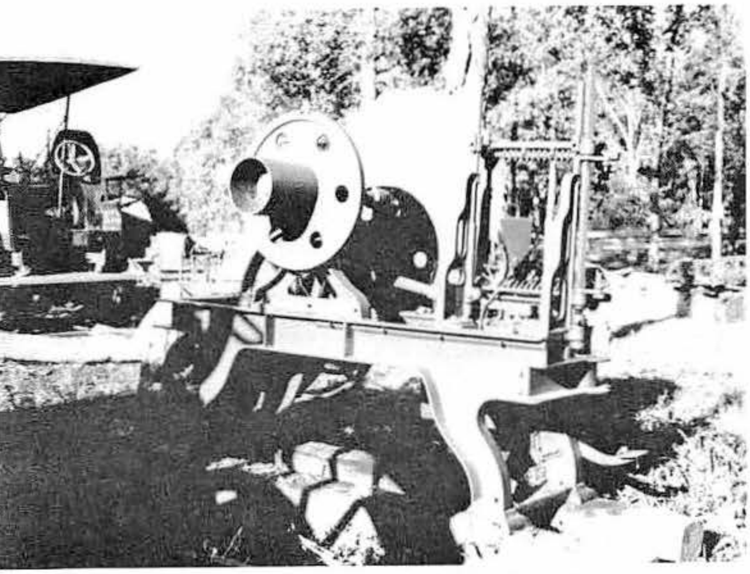
The Chase Turbine Mfg. Co. of Orange, Mass., produced this shingle mill in 1889 for Hench & Drumgold Co. of York, Pa., who acted as general agents and distributors for these mills. Powering the mill at the Rough & Tumble Engineers Historical Assn. show at Kinzer, Pa., is a 1904 model A. B. Farquhar steam traction of 12 H.P. The engine is owned by Robert Lefever of Lancaster, Pa.

C. A. Fisher's shingle mill was built by the J. R. Hall Co. of Salem, Ohio. C. A. Fisher lives in Stoneboro, Pa. His mill is at the Pioneer Steam and Gas Engine Society of Northwest Pa. show at Meadville, Pa.

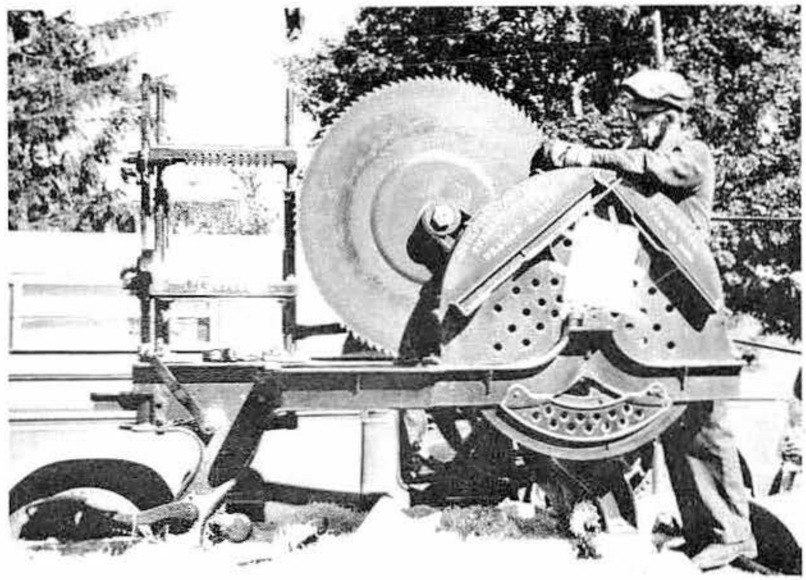




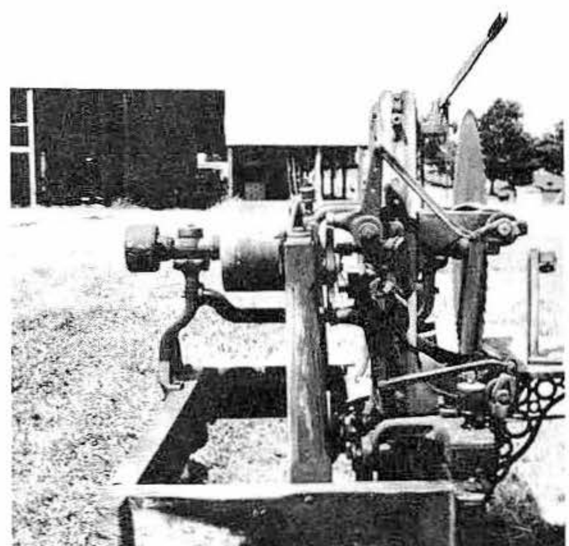
Saw Mills



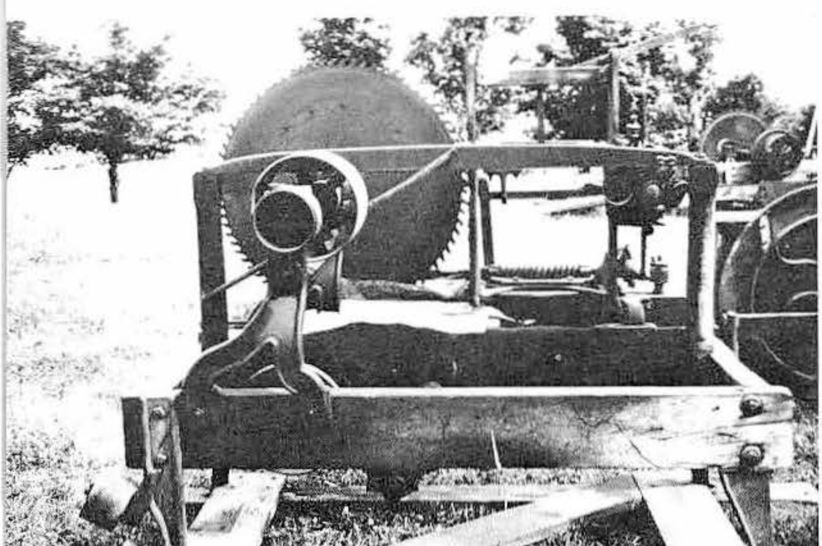
Robert Lefever's shingle mill was made in 1910 by Chase Turbine Mfg. Co. of Orange, Mass. It is the improved automatic set and feed. Lefever lives in Lancaster, Pa., but keeps the shingle mill at the farm of Samuel Osberne in New Oxford, Pa. He will be putting it in a museum when the museum is completed. This well-known and reliable shingle and heading machine, built entirely of iron and steel, was simple in construction and operation. The feed carriage is moved forward and back by a hardened steel roll on the side of an upright swing lever, running in a heart-shaped cam, giving a uniform feed forward and quick return, and running perfectly steady without shock at the fastest speeds. Three different feeds can be obtained by cone pulleys: 16, 28, and 40 cuts per minute, with the saw running at 1,500 R.P.M. The carriage runs on planed ways, which are adjustable to take up wear. The length of the run of the carriage may be changed very quickly, and an automatic stop is provided, which stops the carriage as soon as the block is sawed and ready to receive a new block. Set-rolls are of solid steel and the teeth are long and sharp, taking firm hold of the block. Both rolls are adjustable, enabling the sawing of blocks from 10 to 30 inches long, and have the saw always cut to the center of the block. The saw arbor is of 2¼-inch steel, running in long adjustable bearings, and the saw flange as well as the pulleys are carefully balanced. The jointer is hooped with wrought iron, carries five knives, and is driven direct from the saw arbor. The operator does not have to change his position when jointing. Machines with saws 42 inches in diameter and larger require the jointer to be on a separate frame.



George Kensinger of Roaring Springs, Pa., sets the teeth on his shingle mill, a time consuming but necessary chore on all circular blade mills. Kensinger's mill was built by the Chase Turbine Co. of Orange, Mass., in 1910. He displays this mill at the Morrison Cove Pioneer Power Reunion at Martinsburg, Pa.

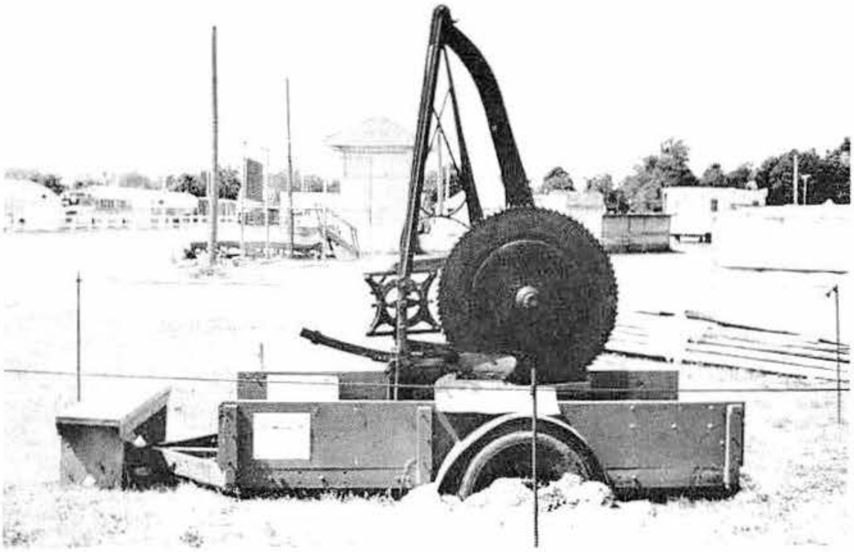


This is a log's eye view of A. B. Ireland's shingle mill built in 1896.

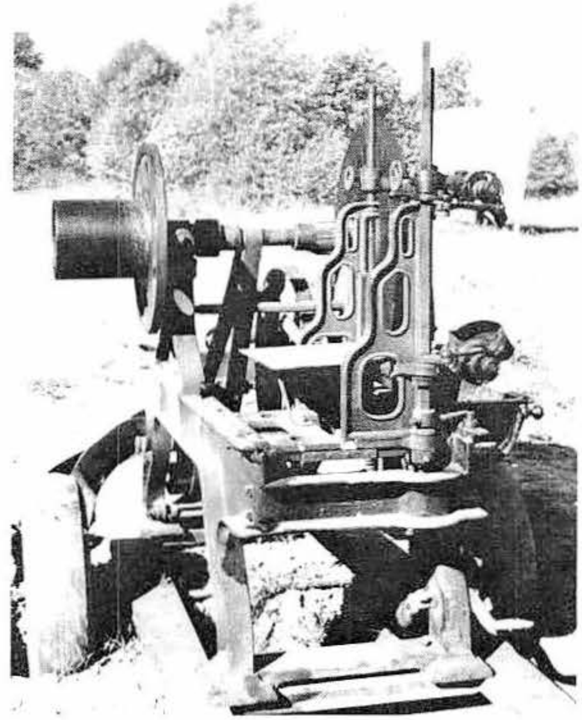


A. B. Ireland's shingle mill was built in 1894. This is in action at the Tioga Count Early Day's show at Whitneyville, Pa.

Saw Mills



Fred Mote's shingle mill lives in Bay Field, Ontario. This is in action at the Ontario Steam & Antique Preservers Assn. show at Milton, Ontario.



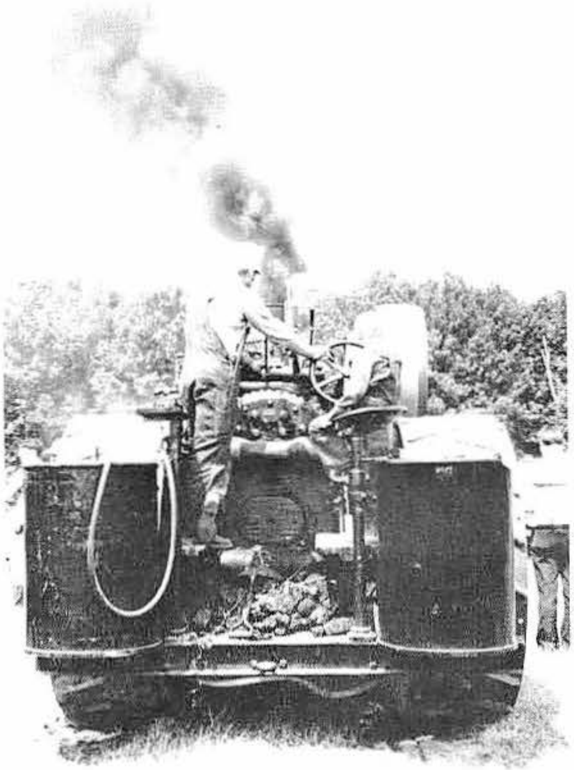
This is Richland County Steam Threshers Assn. shingle mill. It is in action at the show at Mansfield, Ohio.

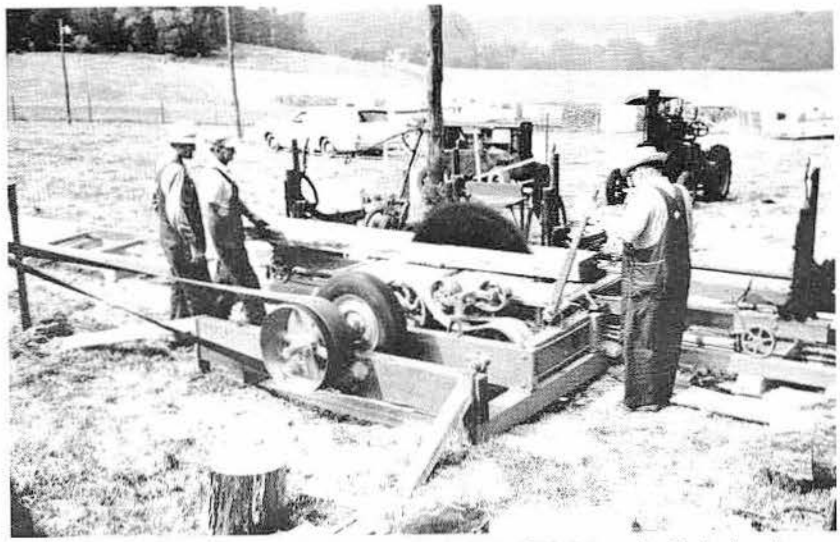
This is a Frick sawmill made in 1950. It is at the Early American Steam Engine Society's show in Stewartstown, Pa. The standard equipment with a Frick sawmill included the improved belt feed works with 5-inch belts, cable drive, mud sills, splash type self-oiling and self-aligning mandrel boxes, tightener pulley and frame for drive belt, right or left hand dogs, last board dogs, cant hooks, and necessary tools.

J. Crowe's 25 H.P. Russell steam traction engine, built in 1919 is running a large sawmill. Crowe lives in Navarre, Ohio. The large sawmill is owned by the Stumptown Steam Threshers Assn. of New Athens, Ohio.

This is a Farquhar sawmill built in 1892. It is owned by Mr. Smith of Martinsburg, Pa., and appears at the Morrison Cove Pioneer Power Reunion at Martinsburg, Pa. The Farquhar sawmill had patent feed, patent dogs and set works, making this sawmill one of the most complete on the market at that time. The set works could be fastened to any point in the carriage to suit the sawer's convenience, as they were independent of the head-blocks. This was a great advantage. By the knee moving back 12 inches to one stroke of the sawer's arm, it overcame the great delay that sawmill men had in ordinary portable mills. This sawmill was built by A. B. Farquhar Co. of York, Pa. Farquhar painted the mills black and red.

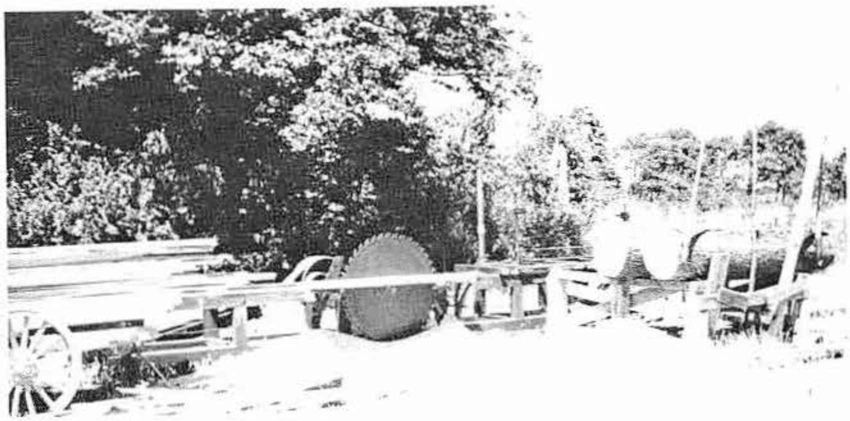
Saw Mills





This is a Frick sawmill rebuilt in 1950. It is at the Early American Steam Engine Society's show in Stewartstown, Pa. Specials, such as parallel knees, lumber trucks, foot set and receding attachment, gauge roll, saw dust drag and log turner, were furnished at additional cost.

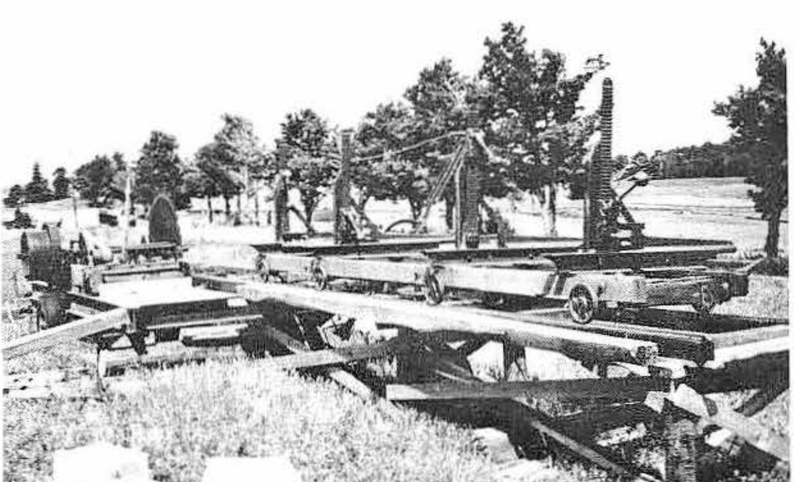
Ralph Woodmansee lines up his 20 H.P. Advance-Rumely steam traction engine, built in 1918, to the club's sawmill. Woodmansee lives in Battle Creek, Mich. Here is a good example of son learning from father. This action took place at the Michigan Steam Engine & Threshers, show at Mason, Mich. The cast iron seat that son is sitting on is a collector's item. Cast iron seats were made and used on early steam traction engines. Some of them had names in the casting. Early portable steam engines were pulled by horses and had an iron seat for the driver. Self propelled steam traction engines like Ralph Woodmansee's had cast iron seats for the engineer.

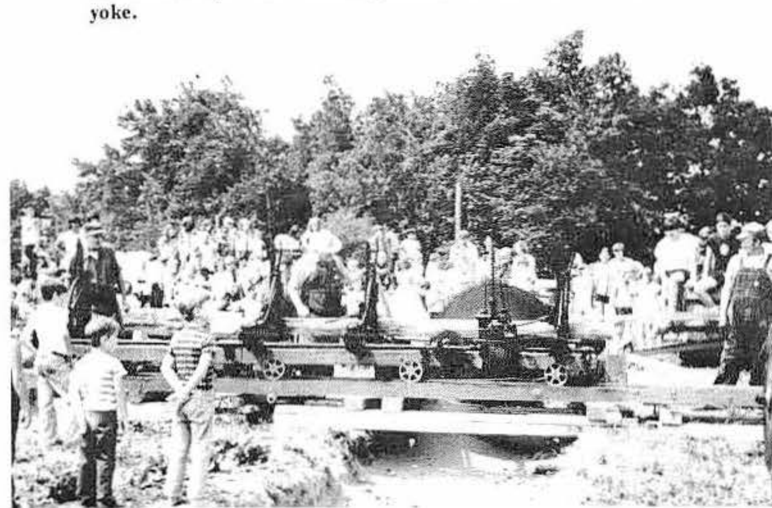


River Bend Steam & Gas Association's sawmill was built in 1915 by American Sawmill Machinery of Hackettstown, N. J. This show is located in Allendale, Mich.

This is a Frick sawmill at the Tioga County Early Days show, near Mansfield, Pa. Frick painted the sawmills red. Husks, carriages and ways were built of high grade, Southern long-leaf yellow pine, accurately mortised, tenoned and braced together. All the carriage and way sections were built to templates, and were interchangeable without special alignment. The mandrels were made of the best grade of steel, turned and ground perfectly true. The nut was so made that the threads could not be stripped or bruised, and the saw could be easily removed when desired. All mandrels were made with a standard sawhead to take saws with 2-inch bolts and two $^{5}/_{8}$-inch pin holes on a 3-inch circle.

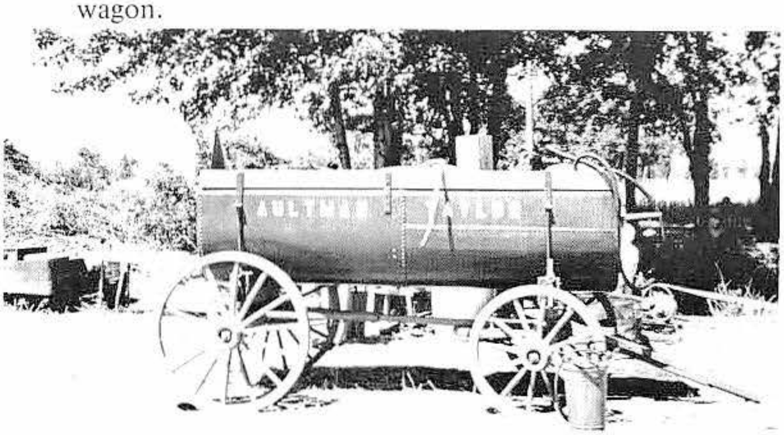
Here is a side view of the rebuilt Frick sawmill at the Early American Steam Engine Society's show in Stewartstown, Pa. This saw's mandrel bearings were babbitted with genuine high-grade babbitt, carefully scraped to fit the mandrel. An oil reservoir was provided under the lower portion of the bearing. An oil ring revolves through the center of the bearing, dipping into the oil and throwing it against the top portion of the binder, which distributes it through a large groove in the binder to all surfaces of the bearing. The excess oil ran into the bottom of the bearing through grooves provided at each end. All bearings were pivoted for lateral adjustment and alignment, and carried in a heavy yoke.



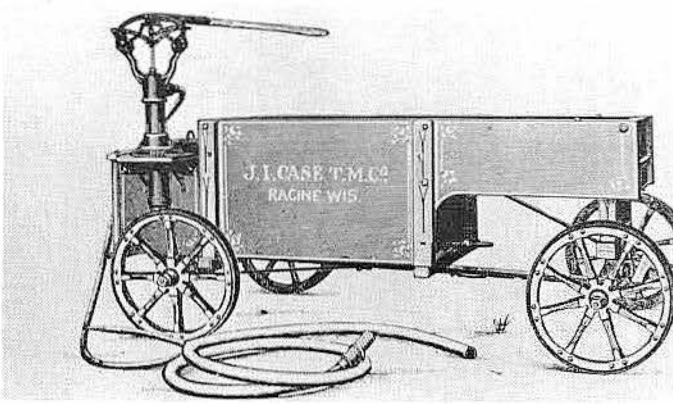


Water Wagons

As could be expected, an absolute necessity for any steam traction engine at work was the water wagon. Once the engine entered a field and hooked up to thresher, plow, or saw mill, it was decidedly impractical to have to unhook the machine so that it could go somewhere for fuel and water. Obviously, the only practical solution was to convey the fuel and water to the machine, usually with a horse-drawn wagon.

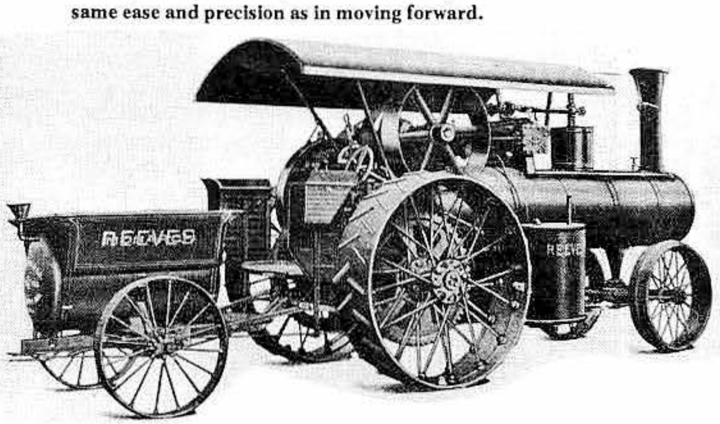


The Aultman-Taylor water wagon holds about 15 barrels of water. It is owned by Jay Bower of Allendale, Mich. It is appearing at the River Bend Steam and Gas Association's show at Allendale.



A Water tender for J. I. Case steam engines was first illustrated in an 1886 catalog. This view appeared later, in an 1893 catalog. It was not until the early 1900s that steel water tenders were adopted.

The Reeves Monarch engine tender, with steel tank, is attached to a 1911 Reeves double cylinder engine. This tender was guided by rods running from the inner ends of the stub axles to the front axle of the engine, to which they were attached the same distance from the pivot as they were on the stub axles, thus the strain on them was very slight. The tender responded instantly to every move of the engine and backed up and turned with the same ease and precision as in moving forward.



The fuel posed no problem. Regardless of what fuel was used, it could be transported by any type of farm wagon. But water was something else. Here a totally new vehicle had to be devised—a vehicle whose sole purpose was to transport water from creek or well to the ever thirsty steamer laboring some distance away.

A few companies which did not manufacture steamers did turn out water wagons as sort of an early "after-market" service. But the most popular wagons were built by the same companies that produced the majority of the steam engines. Among the famous names in the water wagon field were Peerless, Russell, and Gaar-Scott, to name but a few. The products of these companies, though duplicated by several dozen other companies, serve to illustrate the average size and construction of these wagons.

The Peerless was made by the Emerson-Brantingham Co. of Rockford, Ill. It had a capacity of 12 barrels of water or 1,000 pounds of coal. When used for hauling water, its coupling pole could be removed, thus permitting the shortest possible turn. This wagon could also be used as a road sprinkler.

The Russell wagon was made by the Russell Co. of Massillon, Ohio. This wagon was actually a complete tender, carrying water, fuel, tool box, and carry-all box for grease, small parts, etc. The wagons were built of No. 12 sheet steel, with No. 8 steel heads, all of which were riveted. The interior was coated with lead paint, while the outside was highly finished. A partition through the center prevented the sloshing of water when ascending or descending a hill. A combination tongue was provided with each tank. The longer tongue, with double and single trees, was for use with horses, while a shorter tongue (which was permanently attached), was used as a coupling pole when the tank was drawn behind the engine.

Russell furnished the wagons in 5 or 10-barrel sizes. A top rack or carry-all was standard equipment, but a straw rack could be substituted for the carry-all when this type of fuel was being used. The tank was normally furnished without trucks, so that it could be fitted onto any common farm wagon of the day. The pump brackets were of the universal type, so that any type of pump could be fitted. Russell would also supply pumps and hose at an additional cost.

The Gaar-Scott Co. produced a wooden water tank. The tank was made from staves cut from well seasoned stock, with the joints tongued and grooved. Passing around these staves were wrought iron bands, with nuts on the upper ends so that the staves could easily be drawn tighter if they should shrink when the tank stood empty in hot, dry weather. The tank was flat on top, providing space for carrying spare parts. An extension was provided on the front end for carrying fuel. Gaar-Scott also made steel tanks, and both types could be ordered with or without pumps. When ordered with pump, a Myer's Low Down unit, with suction and discharge hose, was provided. The Myer's pumps were known for strong suction and large capacity.

In 1858, J. W. Fawkes of Lancaster County, Pa., took his steam plow to Illinois and won most of the big prizes being offered at that time for a successful Steam Plow. The next year Mr. Fawkes went back to Illinois with a new model. He went over to Moline, Ill., bought eight John Deere plows, then bolted them together to use with his steam traction plow for his winning demonstration in Chicago, against Mr. Waters of Detroit and Mr. Van Doren of Chicago in the famous U. S. Agricultural Society contest in 1859.

That same year, President Lincoln was invited to the Wisconsin State Fair to make the main address. He talked about the steam plow, and what he thought it should be like and the results to American Agriculture that would follow its development. He said: "The successful application of steam-power to farm work is a desideratum—especially a steam plow. It is not enough that a machine operated by steam will really plow. To be successful, it must, all things considered, plow better than can be done by animal power. It must do all the work as well, and cheaper, or more rapidly, so as to get through more perfectly in season; or in some way afford an advantage over plowing with animals, else it is no success."

In 1860, an Illinois farm paper reported what it called "the first actual success in steam plowing in America." The steam plow ran 23 minutes, stopped 6 minutes for wood, ran 13 minutes, stopped 8 minutes for water, ran 1 minute. It plowed 2.63 acres in 72 minutes, using six of a gang of 13 plows. The crew consisted of a man and team to supply fuel and water, a fireman, two to manage the plows, and one of the inventors.

Philander H. Standish's first steam plow was completed at Martinez, Cal., in 1867 and was subsequently patented in the United States, England, France, and Russia. Standish and his steam plow won awards at the Mechanics' Industrial Fair in San Francisco in 1868 and 1869. He tested and experimented on various terrains and soils, attracting the attention of O. C. Coffin, a miller of Contra Costa County, Cal. The latter agreed to finance the building of a second plow in Boston, with Charles F. Coffin, a Boston businessman, to serve as general agent. The partnership of Coffin and Standish was consummated in February, 1870.

In accordance with his agreement with the Coffins, Standish went to Boston to engineer and supervise the building of a steam plow similar to the California model. Upon completion of the project, the machine was shipped to New Orleans early in 1871, where it was tested on a nearby tract of cotton and cane land. The plantation owner, General Davidson, was apparently favorably impressed; he supposedly asked Standish to build a special plow for his Poydras Plantation. Fate dealt cruelly with the career of Standish at this point; the General was killed in a railway accident before arrangements had been completed for the new plow. Further complications and discouragements caused Standish to interrupt his work on the steam plow in 1872 and to move to Missouri, where he perfected a chain-making machine and entered that new business at Jefferson City, Mo.

Although he continued to test his steam plow from time to time and never surrendered his dreams, he was unable to conclude the work successfully.

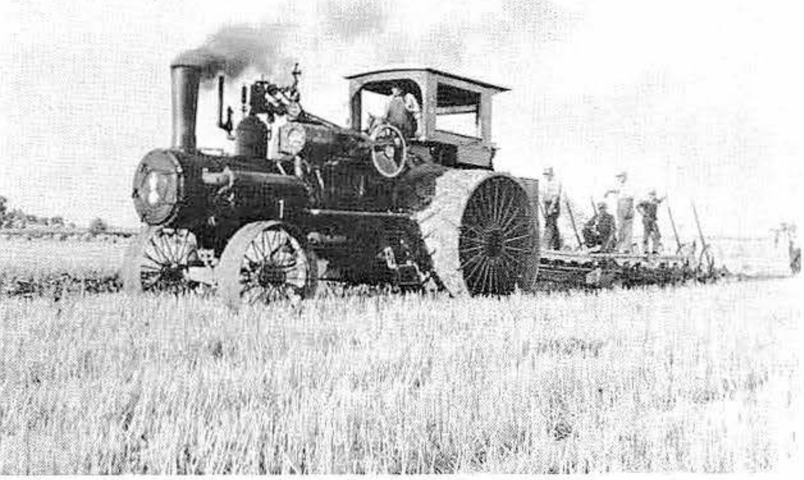
Although there were many attempts at steam plowing and some partial successes during those years, with 13 patents granted in 1871 alone, 1876 is generally considered the birth date of the steam traction engine in the U.S.A. The steam traction engine replaced the steam plow.

The advent of the steam traction engine started the use of tractor plows, early in the present century. The multiple engine gangs—large, heavy plows intended for use with steam traction engines—were among the first types produced. These plows, ranging in size from six to fourteen bottoms, met with farmer approval and broke many a section of western prairie. It is obvious, of course, to anyone who follows the trend in farm machinery, that the large steam traction engine with the multiple gang must, in time, make way for the more easily adaptable smaller outfit. The large steam traction engine had one field purpose only: it would draw the multiple engine plow. With this type of power, custom plowing was the rule.

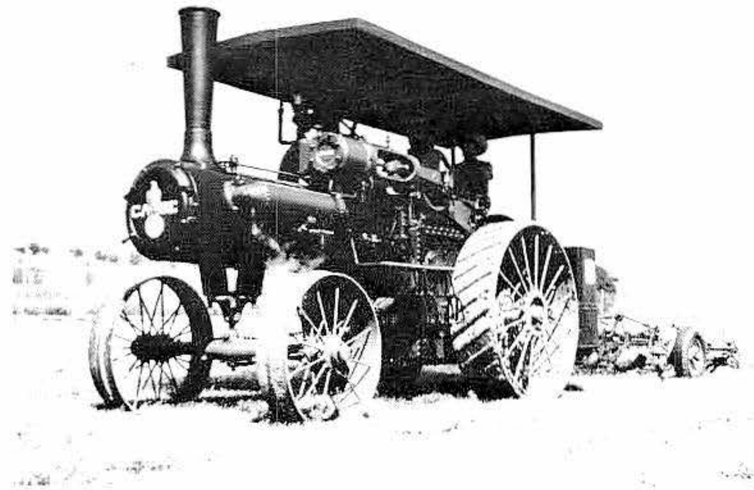
It wasn't until later, when smaller, cheaper and more adaptable engines were developed, that individual farmers would be able to obtain their own tractors and do their own plowing.

This is a J. F. Howard V-S-5 cable plow made in Bedford, England. This plow is at the Henry Ford Museum, Greenfield Village, Dearborn, Mich. In England the cable plow can travel safely at 4 miles per hour plowing through good soil. Cable plowing in North America was not used because of the hills. In the western part of North America, cable plowing was not adapted to the large grain fields of the west. The length of the furrow was usually measured in half-miles rather than in rods, and the English plows with their short strings of cable were grossly inadequate. By 1870, there were 3,000 steam cable plowing outfits in operation in England and only four operations in the U.S.A. A southern planter, Henry E. Lawrence, used one of these plowing outfits on his 1,000-acre sugar estate near New Orleans.

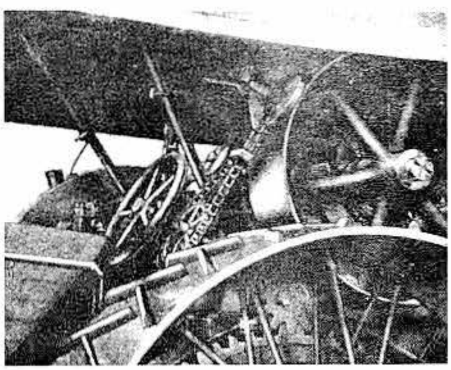
Plowing



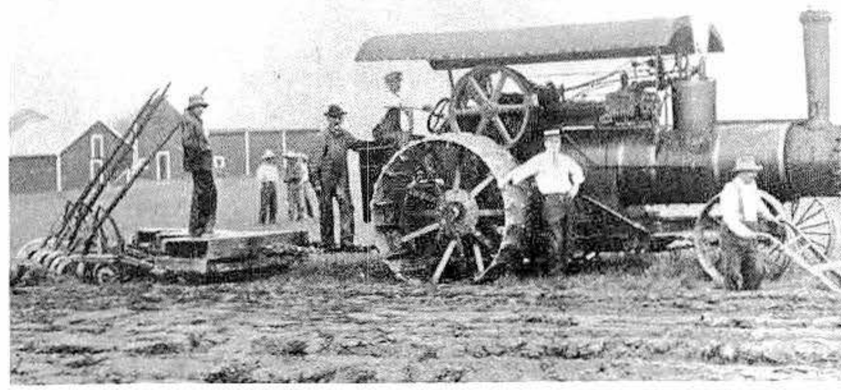
In an original scene, a 110 H.P. J. I. Case steam traction engine, built in 1911, is plowing with a 14-bottom plow. The plowing took place at the Kings Farm in Kings, Ill., but sadly, no date identifies when the photo was taken.



Samuel F. Kriebel's 40 H.P. J. I. Case steam traction engine was built in 1917. Kriebel is starting to plow with a 5-bottom International Harvester plow. This is the first plowing with steam traction engines at Rough & Tumble Engineers Historical Assn. at Kinzer, Pa. Kriebel lives in Mainland, Pa.



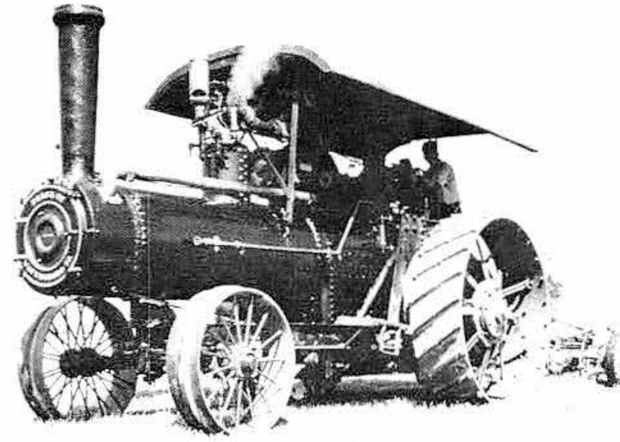
The Reeves friction power guide was a very simple but effective power-steering device. It could be attached to all Reeves engines of 20 H.P. and larger sizes. It consists of a friction disc disengaged from the band wheels but which could be brought into contact with either the right or left band wheel by the use of a lever conveniently located in the cab above. A chain engaging with a sprocket wheel attached to the disc shaft and another attached to the steering shaft transmitted the power, and was easily controlled by the operator. The use of this attachment was recommended only where the engine was to be used mainly for traction purposes, and was furnished only on special order at extra price. Reeves developed this unit sometime before 1910.



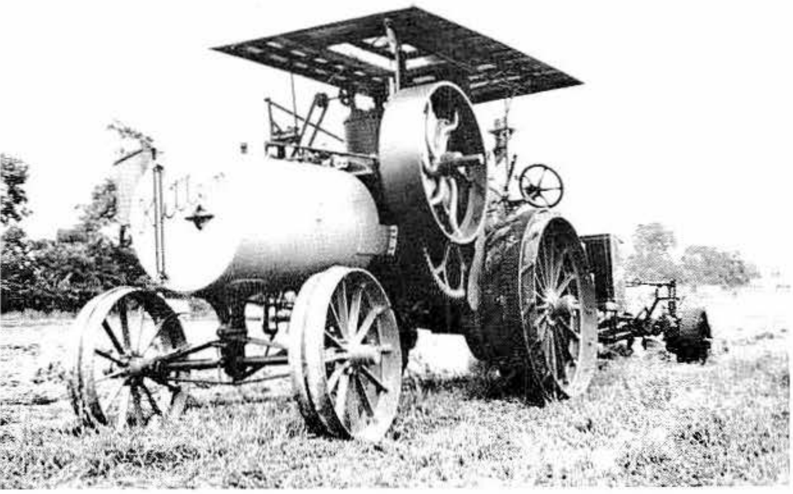
A Frick steam traction engine at work on the prairies, compared with an ox team and plow as used in the mid-1800s. Oxen did well to turn half an acre in a day.

Dean Deibert's 50 H.P. Frick steam traction engine, built in 1917 is plowing with a 5-bottom International Harvester Plow. Deibert lives in Gratz, Pa. This plowing took place at the Williams Grove Historical Steam Engine Assn. show, at Mechanicsburg, Pa. In the background in Blair Sell with his 50 H.P. Peerless built in 1923. Sell lives in Duncansville, Pa.

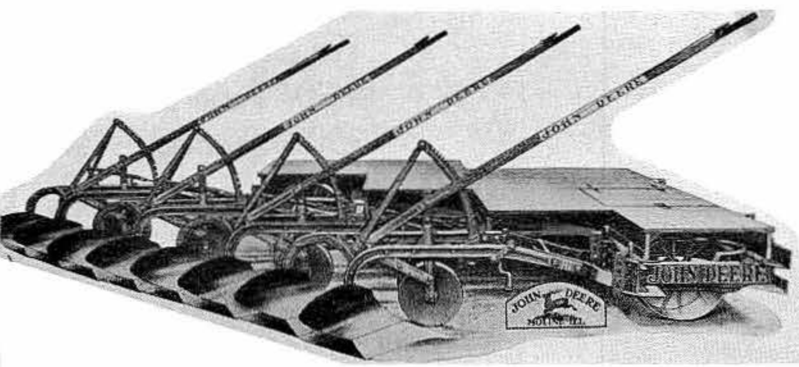
Martin M. Weaver's 65 H.P. Frick steam traction engine, built in 1924, is plowing with a 5-bottom International Harvester plow. Here he is starting to plow. This was the first time plowing for Mr. Kauffman, the engineer, at Rough & Tumble Engineers Historical Assn. at Kinzer, Pa. Weaver lives in Leola, Pa.



Plowing



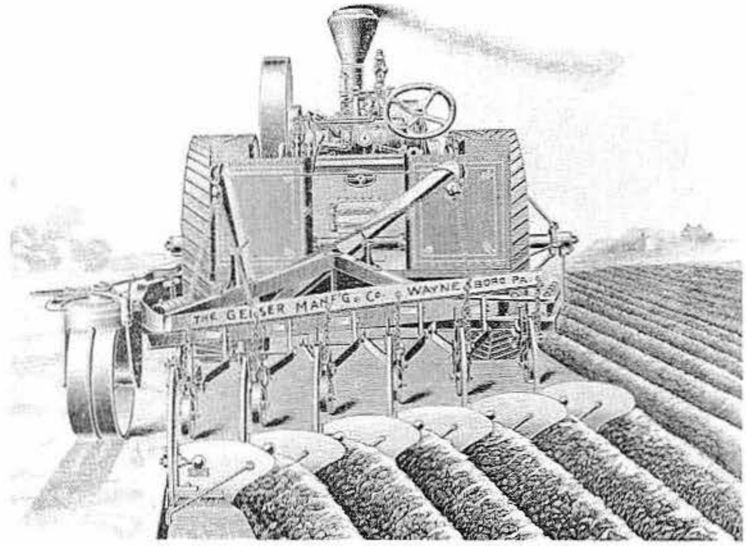
Paul B. Stoltzfoos' 24 H.P. Kitten steam traction engine, built in 1925, is plowing with a 5-bottom International Harvester plow. Stoltzfoos lives in Leola, Pa. This plowing took place at the Williams Grove Historical Steam Engine Assn.



The 1912 John Deere steam traction engine plow was made with 4, 6, 8, 10, 12, or 14 bottoms. Each lever lifted two bottoms. It was furnished complete with hitch chains ready for the engine. Among the more prominent and exclusive features, were the two-bottom lift, screw clevises and quick detachable shares.

A giant Reeves 140 H.P. steam traction engine is pulling a 20-bottom plow. This giant was the largest plow ever brought into western Canada. It could break up six acres an hour. It is one of the main features of the Western Development Museum located in Saskatoon, North Battleford, and Yorkton, Saskatchewan.

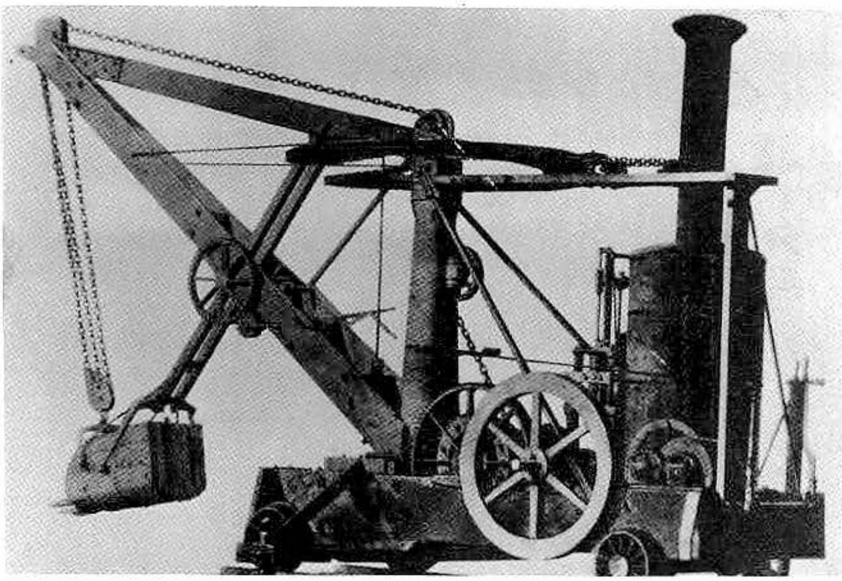
George Derr's 50 H.P. Peerless steam traction engine, built in 1923, is plowing with a 5-bottom International Harvester plow. Derr lives in Mechanicsburg, Pa. This plowing also took place at the Williams Grove Historical Steam Engine Assn.



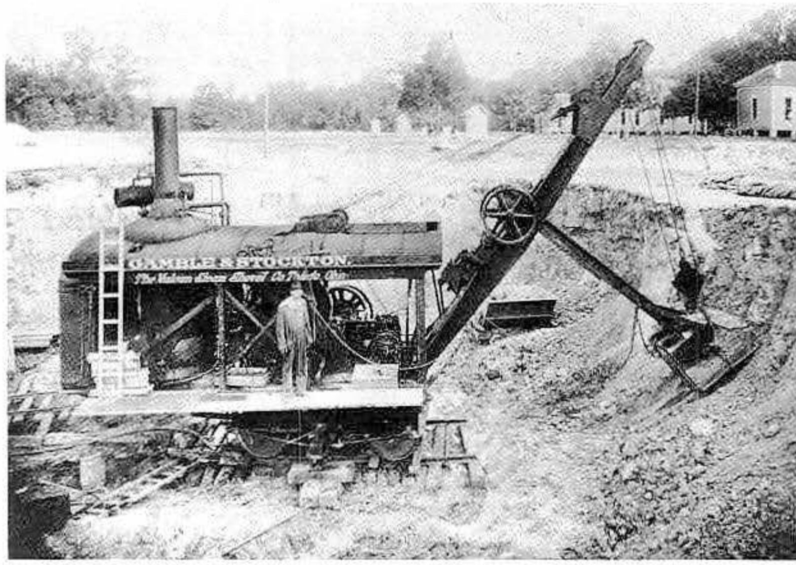
The Peerless steam plowing outfit was guaranteed to be able to plow as much soil in the same time, to an equal depth, as can be done with six 3-horse teams, provided the soil is firm enough to carry the engine, free from stumps and rocks, not too wet, and having no grades over one foot rise in ten and good fuel and water were provided. This picture was taken from a 1893 Peerless catalog of the Geiser Manufacturing Co. of Waynesboro, Pa.

Hingtgen's 40 H.P. Rumely steam traction engine is plowing with a 14-bottom plow. This plowing took place on the farm at La Motte, Iowa.

Steam Construction Equipment



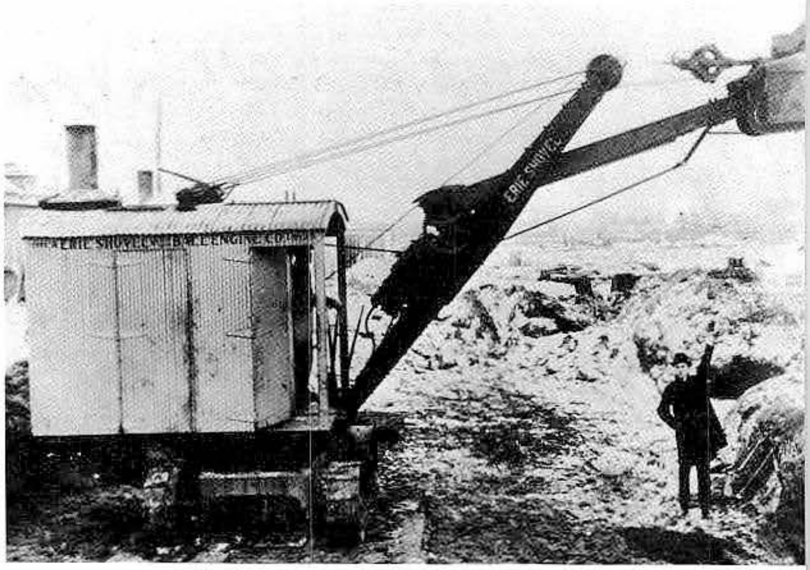
Bucyrus Foundry & Mfg. Company's first steam shovel was built in Bucyrus, Ohio. Dan P. Eells and a group of businessmen founded the company in December 18, 1880. In 1893 the company moved to South Milwaukee, Wis. and was incorporated under the name of Bucyrus Steam Shovel and Dredge Co.



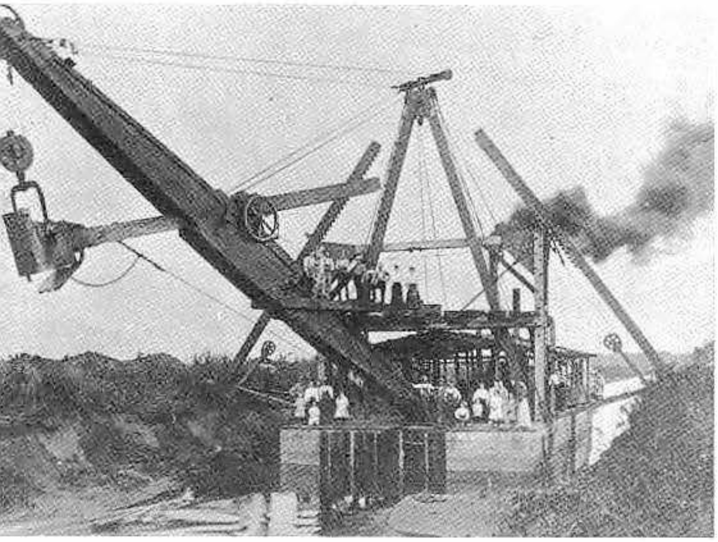
This Vulcan steam shovel was built in 1890 by the Vulcan Steam Shovel Co. of Toledo, Ohio. Bucyrus Steam Shovel and Dredge Co. in 1895 was in receivership and reorganized in 1896 to become the Bucyrus Co. The Bucyrus Co. became a publicly-owned corporation in 1911 and at that time acquired the Vulcan Steam Shovel Co.

The Erie Type "B" steam crawler crane built in 1923 by the Ball Engine Co., which soon after became the Erie Steam Shovel Co. of Erie, Pa. The weight of this crane in working order was about 22 tons. It is using a standard type clam-shell bucket. It was owned by the Moore-Young Construction Co. of Waterloo, Iowa, which used it mainly to hoist bulk sand and gravel into loading hoppers.

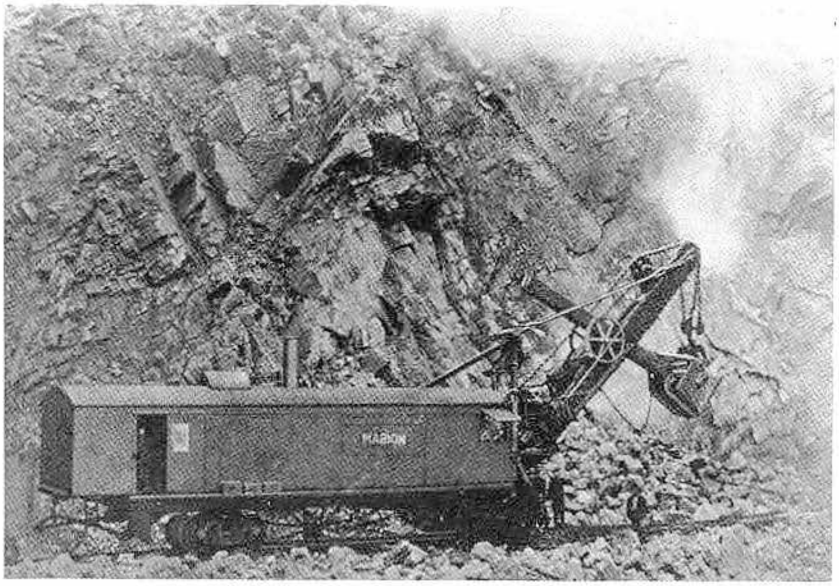
The Marion steam excavator was built by the Marion Steam Shovel Co. of Marion, Ohio. Today the home office is still Marion, Ohio but the name is now Marion Power Shovel Division, Dresser Industries, Inc. This type of unit today is known as a back hoe.



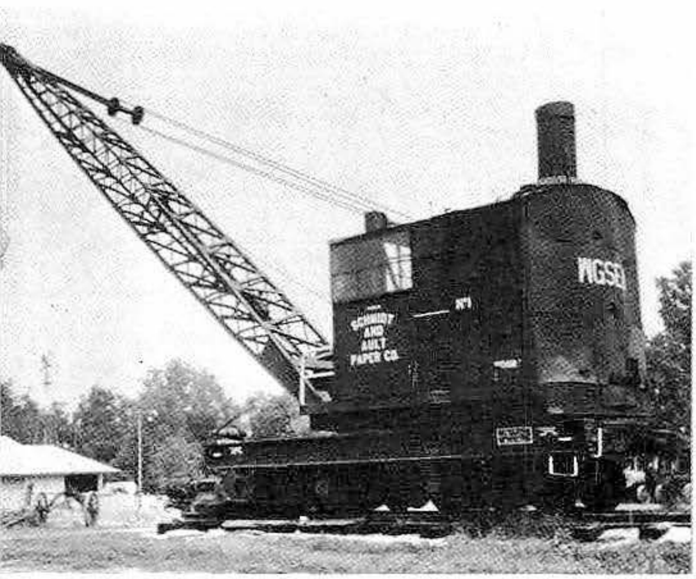
The Erie Type A steam shovel was built in 1910 by the Ball Engine Co. of Erie, Pa., which later became the Erie Steam Shovel Co. The firm was founded in March, 1883 by F. H. Ball and W. H. Nicholson. At that time they formed the Ball Engine Co. to manufacture steam engines. Bucyrus merged with the Erie Steam Shovel Co. in 1927 to form the Bucyrus-Erie Co. of today. The Bucyrus-Erie company's international office is in South Milwaukee, Wis.



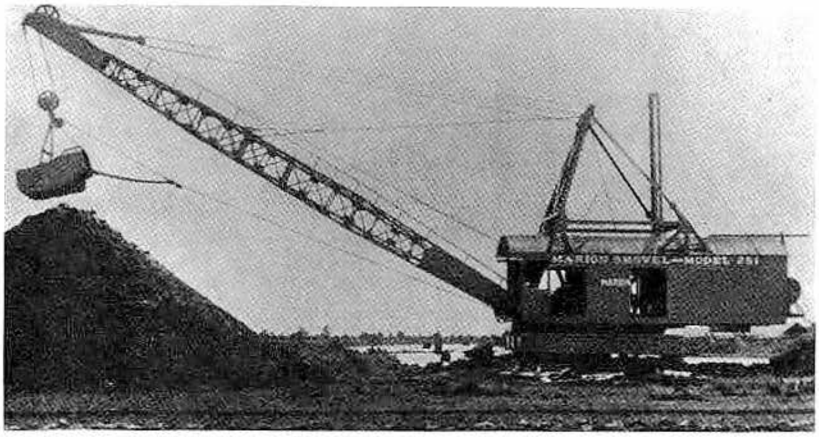
A huge piece of equipment was this Marion 2½ yard steam ditching dredge built by the Marion Steam Shovel Co. of Marion, Ohio. It was owned by Birks & Kiick and in this picture it was working near Latham, Ill. This steam dredge was equipped with bank spuds to prevent it from drifting into the mud bank while dredging canals and large drainage and flood control ditches.



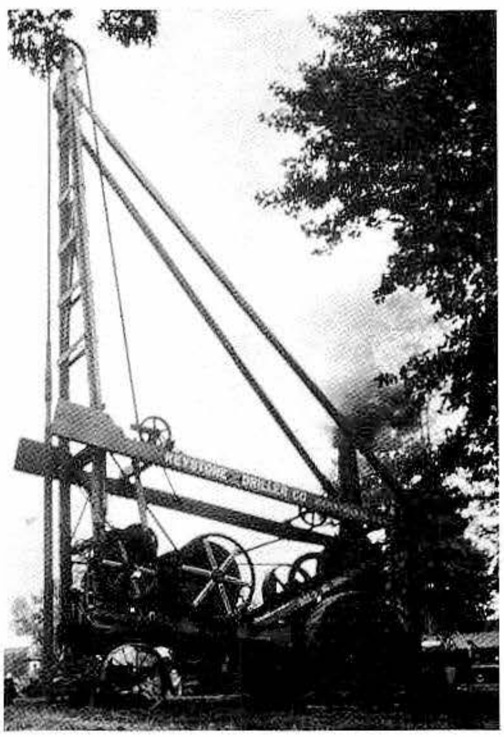
Digging iron ore at Kirkenes, Norway is this Marion Model 92 railroad-type steam shovel built by the Marion Steam Shovel Co. of Marion, Ohio. The unit was owned by the Aktieselskabet Sydvaranger Co. Kirkenes is situated two hundred and fifty miles north of the Arctic Circle, where the temperatures and weather presented plenty of problems for steam operated equipment.



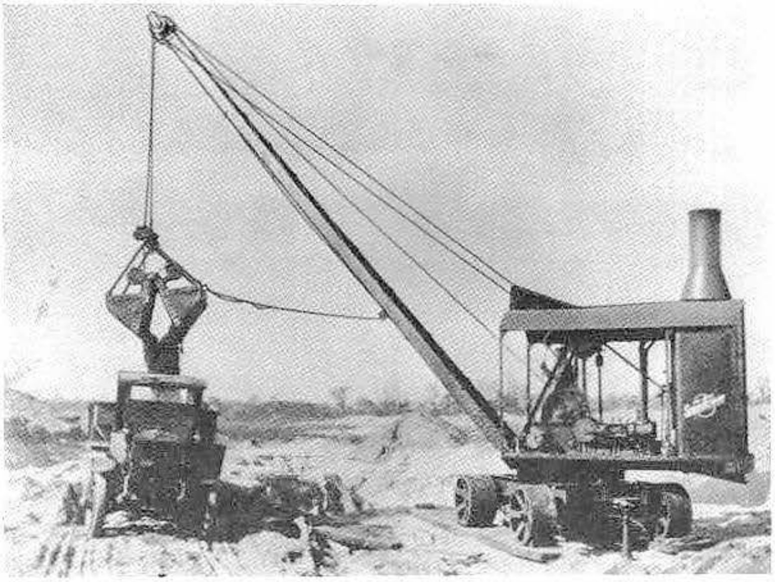
Ohio Locomotive Crane Co. of Bucyrus, Ohio built this crane in 1920 then shipped it to the Schmidt & Ault Paper Co. of York, Pa. Schmidt & Ault Co. donated this crane in 1973 to the Williams Grove Steam Engine Association's collection at Mechanicsburg, Pa. The author is a member of this club. It is a Standard Model C-D 20 tone 8-wheel MCB type, standard gauge, steam driven, self propelling engine. It is equipped with a 50-ft. boom. The engines are of the horizontal, non-reversing type, having a nominal full rating of 125 H.P., when operating at a speed of 300 RPMs, cylinders are 10 x 10 inches. The Ohio Locomotive Crane Co. was founded by Charles F. Michael, born in Cleveland, Ohio in 1875. He worked as a molder for McMyler Crane Co. in Cleveland until 1909, when he moved to Bucyrus, Ohio, and founded the Ohio Locomotive Crane Co. which is still building cranes today. It's home office is in Bucyrus, Ohio.



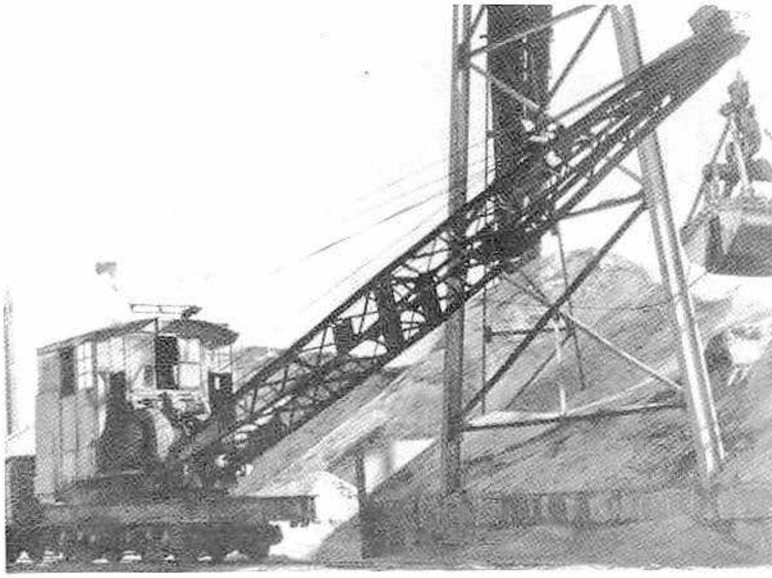
This Marion Model 251 large steam dragline excavator is shown being used in Bangkok, Thailand for an irrigation project. It was built in Marion, Ohio, by the Marion Steam Shovel Co. The owner of this dragline was the United Engineers, Ltd. of Singapore.



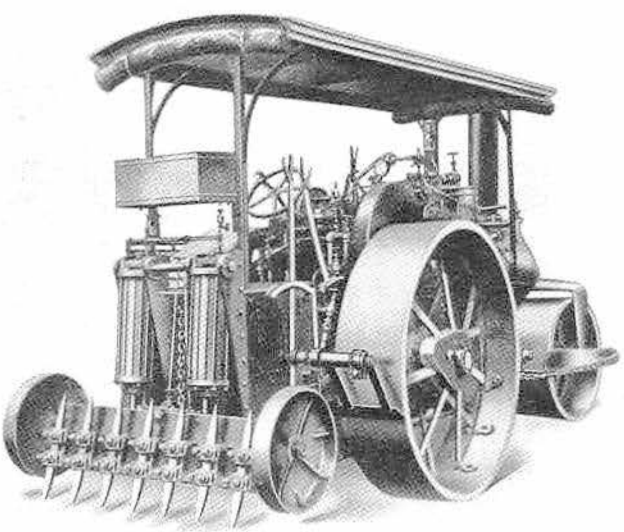
Shown in restored and operating form is a Keystone Steam Traction well Driller built in 1911 by the Keystone Driller Co. of Beaver Falls, Pa. This steam traction driller was designated size No. 3. It is owned by Bupp & Wendell Bintrim of Harmony, Pa., and is in action every year at the Northwestern Pennsylvania Steam Engine and Old Equipment Association show at Portersville, Pa.



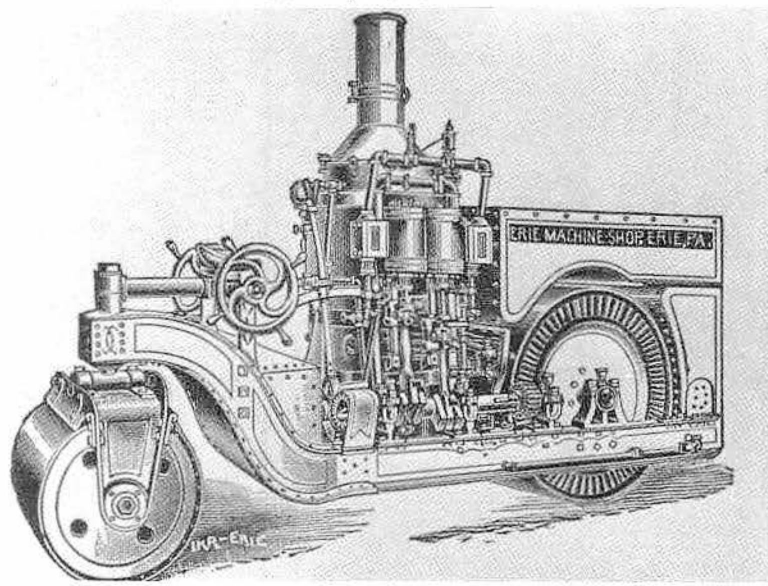
The Moore Speedcrane was a four-wheel traction steam-driven crane with a clam-shell bucket and a 15 ton capacity. It was built in the 1920's. Roy and Charles Moore of Chicago, Ill. built these cranes in Ft. Wayne, Ind. Roy Moore joined Manitowoc Shipbuilding Corp. of Manitowoc, Wis. in 1925. This company had been started in July 1902 as Manitowoc Dry Dock Co., having been organized by Elias Gunnell, Charles C. West, Thomas J. Prindiville, E. J. Lenihan and L. E. Geer. The Manitowoc Boiler Works merged in 1916 with Manitowoc Shipbuilding and Dry Dock Co. to become simply Manitowoc Shipbuilding Co. Then in 1952 the name was changed to The Manitowoc Co. with home offices today in Manitowoc, Wis.



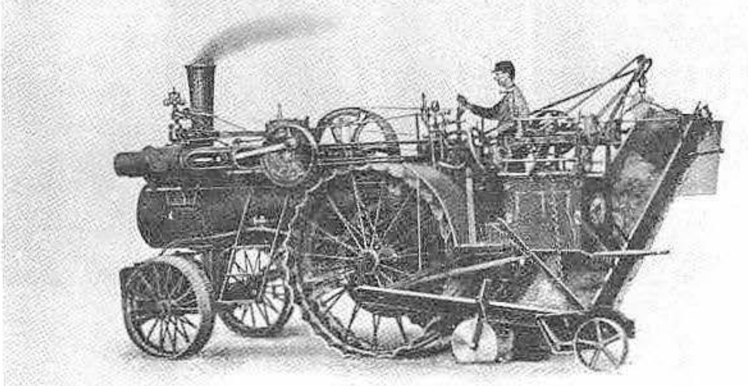
The Link-Belt Speeder steam powered locomotive crane was built in 1916 by the Fairbanks Morse Corp. This is a railroad crane-clam-shell built in Iowa. The historical roots of F.M.C.'s Crane and Excavator Division date back to the year 1894 with the introduction of the Link-Belt wide gauge, coal handling clam-shell. In 1921, the Link-Belt crawler-mounted crane ¾-excavator was introduced. The crawler crane line continued to grow and by the late thirties included a complete line of cranes and excavators ranging from ¾ to 3½-cubic yard capacity. Today the home office of the F.M.C. Corporation Crane & Excavator Division is in Cedar Rapids, Iowa.



An Acme steam road roller is shown equipped with a steam pressure 7-tooth, 2-cylinder scarifier attachment. The teeth were individually removable and reversible. All the controls were within easy reach of the operator. This is a 15-ton steam road roller built in 1927 by the Acme Road Machinery Co. of Frankfort, N.Y.

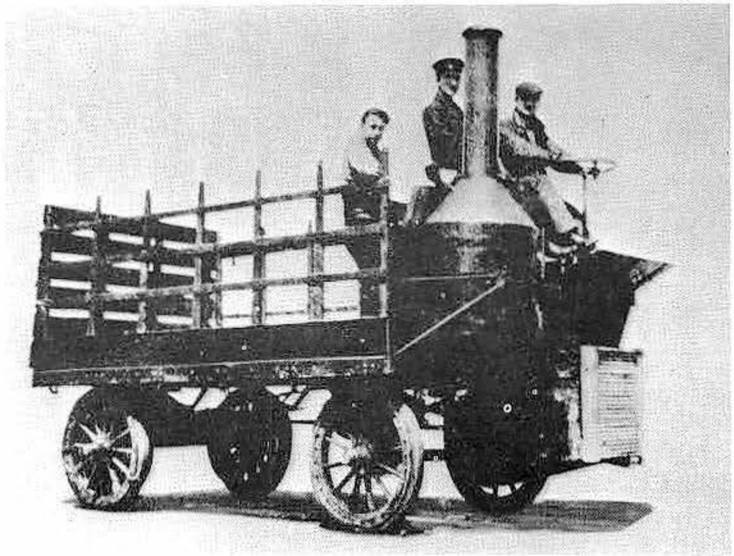


Erie Machine Shop's steam road roller was built in Erie, Pa. The boiler is nearly half way between the back and front roller, resting on the frame, and the engine is attached to it on one side. It is a double reversing engine, the crank shaft being connected directly to the back roller by means of bevel gear and pinion.



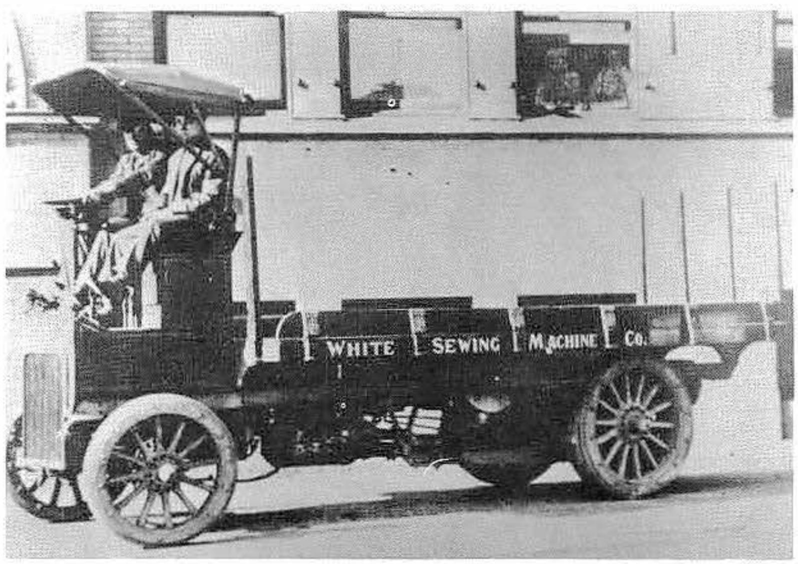
This is a Port Huron dirt handler patented in 1901. The Port Huron was the only engine company having a dirt elevating grader, or wagon loader at that time. This machine consists chiefly of an adjustable frame attached to rear of the engine. It had two rollers around which was placed a wide 6-ply endless canvas belt. The upper end of frame could be adjusted to suit wagons, or delivery of dirt, to the best advantage in grading the road. At the upper end of the frame was a distributing device, which was used when the engine was delivering dirt to the road grade. By means of this distributor, dirt could be delivered to almost any point desired on the road. The plow was fastened to the axle of the engine, so that the plow delivers the dirt directly onto the lower end of the elevator. Levers were provided for the engineer to quickly raise and lower the plow and adjust the elevator.

White Motor Corp.



Although steam trucks are beyond the scope of this book, the early White products have been included only because steam vehicles lie at the very roots of what is today one of America's major truck and tractor builders. The White Sewing Machine Co. of Cleveland, Ohio, began experimenting with steam-driven automobiles in 1900, and by 1901 had produced and sold 193 of these vehicles. In 1903 the company began experimenting with the use of steam power for heavy trucks, and came up with this 5-ton capacity model. It is not known for sure if this heavy duty model was an experimental vehicle or if it was built on commercial order. By 1901, White was successfully marketing a rather attractive little steam-powered delivery car based on its automobile chassis, but the giant shown here appears to be the company's first entry into the then virtually unheard of heavy truck field.

By 1905, White was building its heavy-duty, 5-ton capacity steam trucks on a commercial basis. These trucks still used a heavy upright oil-fired boiler situated beside the driver. The radiator-like unit hanging below the operator's platform was the steam condenser. This truck bears the name White Sewing Machine Co. Either it was used by White within its own plant, or had the name painted on the side for promotional purposes. White Sewing Machine Co. changed its name to The White Co. in 1906, and to White Motor Co. in 1918. Its founder, Rollin H. White, was the prime mover behind the company's entry into the field of steam transportation.



By 1903, White was firmly entrenched in the steam car business, producing a wide range of steam cars, ambulances, and police patrol wagons on its light chassis and busses and trucks on its heavy chassis. By 1906, when this 5-ton capacity truck left the factory and went into in-house service for the plant, the heavy-duty models had become quite refined. The boiler now was located under the driver's seat, making this model one of the earliest cab-over-engine trucks on the road. Driver protection of sorts was now provided by the folding cart top. The boiler and condenser were located under the operator's platform, while the engine was located mid-ship. During its corporate career, White absorbed the Nichols & Shepard Co. and Minneapolis Threshing Machine Co., both of which had built steam traction engines.

Test Equipment

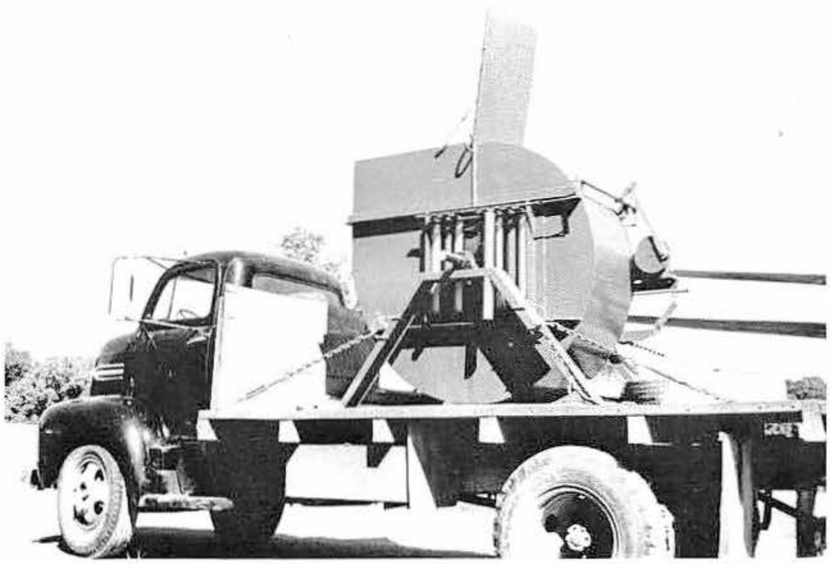
Most responsible steam engine builders gave their machines a thorough test before leaving the factory. Such tests were often conducted on a power device of some sort, which would both check the engine's power and help run-in the parts under varying loads. Today, these same pieces of test equipment are used at the various steam traction engine meets to check the power output of different engines, help run-in new parts, and in general to entertain spectators and participants alike.

The two primary types of test equipment are the Power Eater generator, or the Baker fan. By far the most interesting is the Power Eater. This consists of a dynamo loaded to resistance of some type—today, usually a large bank of lights. Power input can be increased or decreased by a rheostat. The rheostat controls the brightness of the lights. Running these lights from very dim to very bright puts a tremendous increase on the power needed to run the dynamo. Thus, power need can be easily increased or decreased by one man operating the rheostat. A similar effect can be obtained by a bank of switches, illuminating more and more lights in order to increase the power load.

In earlier days, however, when the Power Eater served a practical purpose at the plant of A. D. Baker, such a device required the attendance of two men—one to operate the engine and one to stand by and control the rheostat. A. D. Baker, who would not allow one of his engines to leave the factory without a thorough run-in period, was annoyed at having to have two highly paid test engineers operate this machinery.

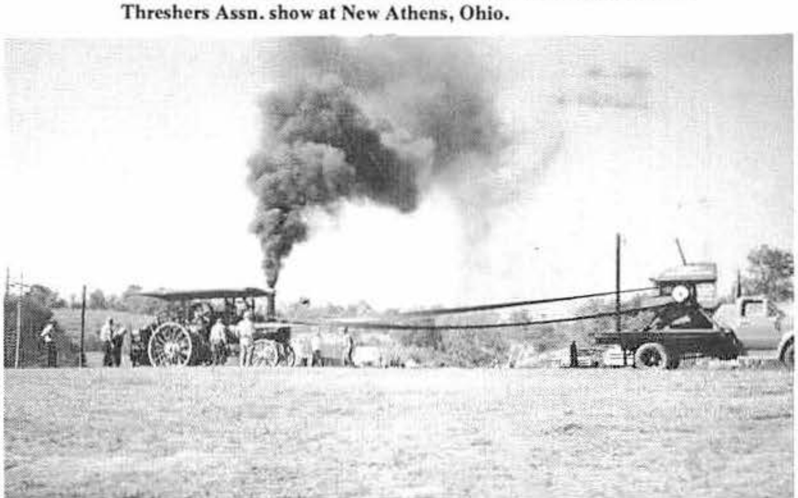
After some thought, he devised the Baker fan to replace the Power Eater as a run-in machine. This device, which is widely used at steam shows today, is simply a large, 4-bladed rotary fan, operating on a horizontal shaft. Air resistance of the blades creates the power load, with this load being varied by hooking the belt of any one of several size pulleys on the shaft. The operation of this unit required only one man—the engineer. To change the load, he would simply stop the belt, shift to another pulley, and start up again—with no rheostats, dynamos, light banks, or other electrical components to worry about.

The Ashcraft test fan is being used to test Fred Smith & Son's 65 H.P. J. I. Case steam traction engine built in 1914. The Smiths live in Johnstown, Ohio. This action occurred at the Richland County Steam Threshers Assn. show at Mansfield, Ohio.

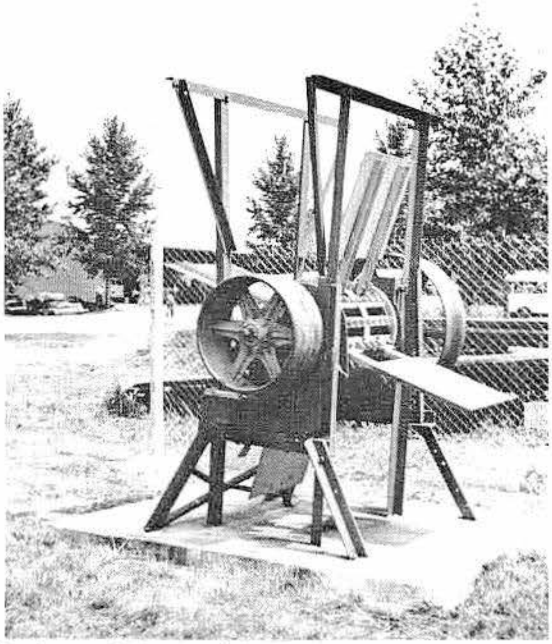


Here is a good close-up of the Ashcraft test fan used at the show in Mansfield, Ohio. It is music to a steam buffs ears to hear a steam traction engine working the test fan.

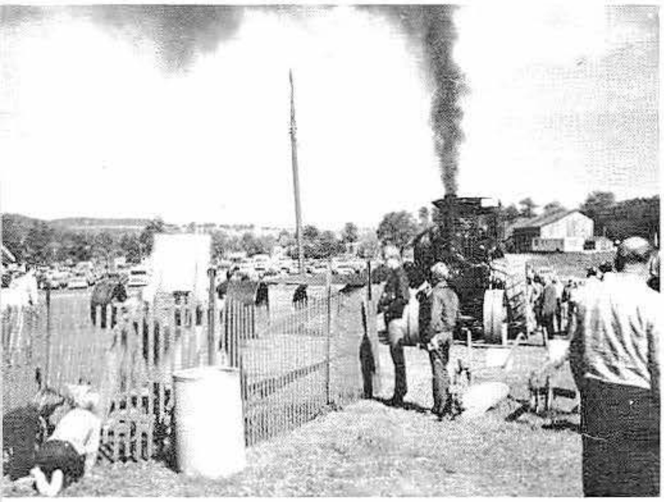
The Ashcraft test fan is being used to test Raymond Laizure's 16 H.P. Russell steam traction engine built in 1920. Raymond Laizure is editor of the "Stumptown Steam" hobby magazine, Cadiz, Ohio. This action occurred at the Stumptown Steam Threshers Assn. show at New Athens, Ohio.



The Baker test fan is being used to test C. Archie Glenn's 16 H.P. Twentieth Century steam traction engine built in 1916. Glenn lives in Plain Grove, Pa. This took place at the Pioneer Steam and Gas Engine Society of Northwest Pa. show at Meadville, Pa.

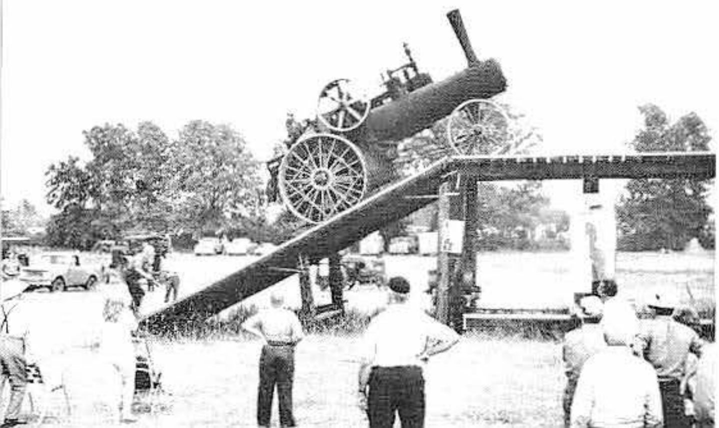


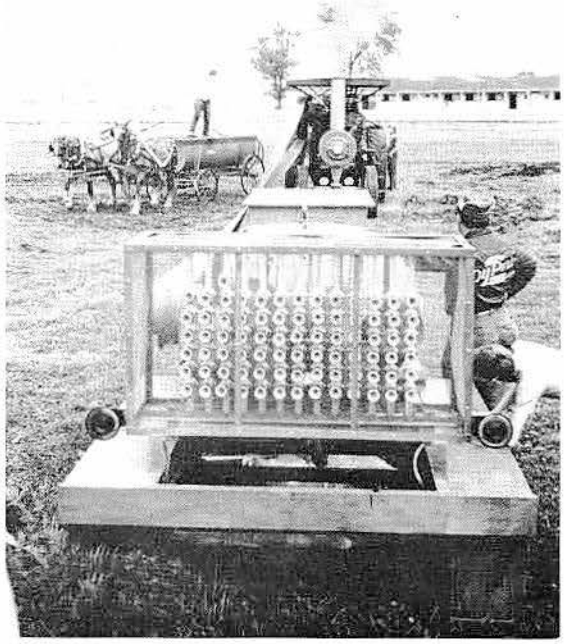
Here is a good close-up of the Baker Fan owned by Rough and Tumble Engineers Historical Assn. of Kinzer, Pa. A. D. Baker invented the fan to load his engines and test them at the factory. The fan's four flat plates create air resistance.



The Baker test fan is being used to test Willis Abel's 110 H.P. J. I. Case steam traction engine built in 1912. Willis Abel lives in Finleyville, Pa. This action was at the Tri-State Historical Steam Engine Association show at Hookstown, Pa.

Harry Woodmansee of Hastings, Mich., demonstrates his skill as an engineer during the hill climb test at the Michigan Steam Engine & Threshers show at Mason, Mich. The engine is Woodmansee's own 12 H.P. J. I. Case, built in 1920. Climbing a ramp this steep requires expert engine handling, as there is no draft at this angle and the engine can literally run out of steam before reaching the top of the incline.

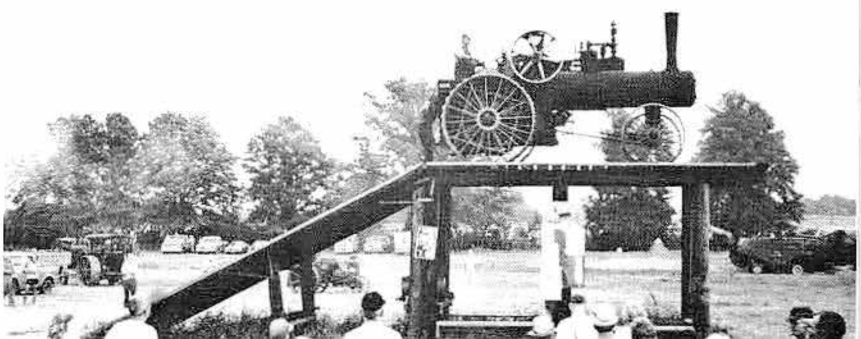




Carl Weidman's 16 H.P. Russell steam traction, built in 1923, is running the power eater to test the engine. The generator (power eater) is owned by John McDowell of Plainfield, Ohio, and Lloyd Beachy of Sugar Creek, Ohio. Carl Weidman lives in Orrville, Ohio. This action was at the Tuscarawas Valley Pioneer Power show at Dover, Ohio.

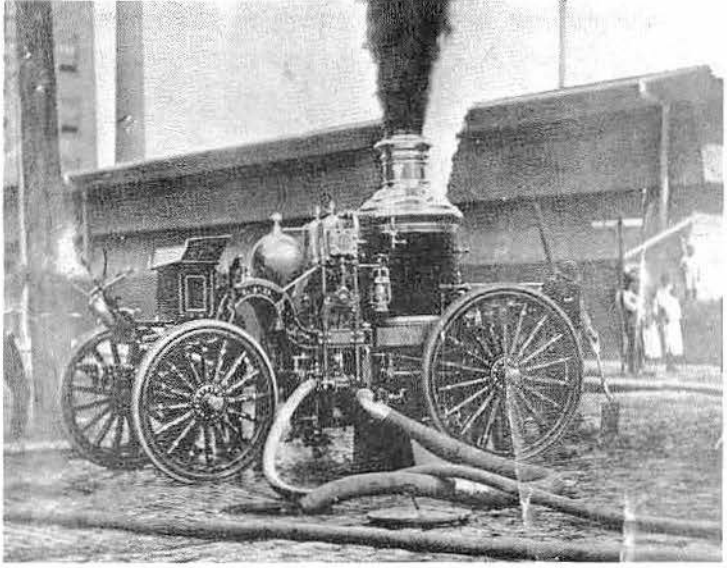
Here is a close-up of the power eater (generator) used to test the steam traction engines. The generator creates a resistance by generating electricity, which in turn is used up by the large bank of heating coils.

The task completed, Harry Woodmansee stops his engine at the top of the ramp and allows the boiler time to build up steam for the return trip. The ramp was built in 1971 strictly for such tests. It is on the grounds of the Michigan Steam Engine & Threshers Assn. at Mason, Mich.



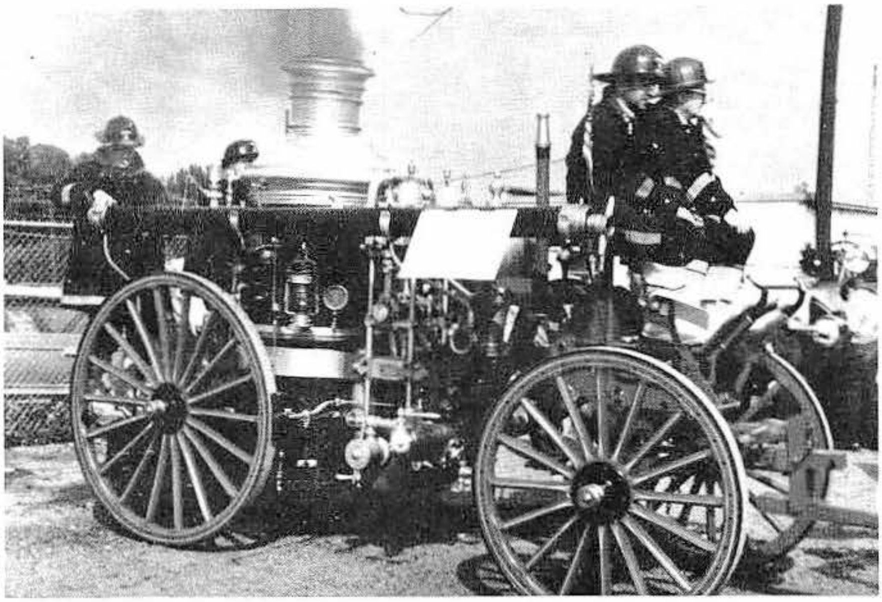
Steam Fire Engine Manufacturers

Agnew, John, Philadelphia, Pa.
Ahrens-Fox Fire Engine Co., Cincinnati, Ohio.
Ahrens Manufacturing Co., Cincinnati, Ohio.
Allen Supply Co. Works, Providence, R.I.
Allerton Iron Works, South Norwalk, Conn.
Allerton & Stevens, New Haven, Conn.
American Fire Engine Co.
(A consolidation of Silsby, Ahrens, Clapp & Jones, and Button) Seneca Falls, N.Y., Cincinnati, Ohio, Waterford, N.Y. and Hudson, N.Y.
American LaFrance Fire Engine Co., Elmira, N.Y.
Amoskeag Manufacturing Co., Manchester, N.H.
Amoskeag Steamers (A & B Manufacturing Co.,), Providence, R.I.
Arlington Iron Works, Waverly, Iowa.
Arthur, Burham, and Gilroy, New York, N.Y.
Banks, Joseph, New York, N.Y.
Bean & Scott, Lawrence, Mass.
Bird, George M., & Co., East Boston, Mass.
Blake, George F., Boston, Mass.
Button, L. & Co., (Button Fire Engine Works; includes Button & Blake), Waterford, N.Y.
Burrell, Johnson, Yarmouth, N.S., Canada
Campbell & Rickards, Philadelphia, Pa.
Campbell & Whittier, Roxbury, Mass.
Chapman, G. J. & J. L. (Also listed as J. S. & J. C. Chapman), Philadelphia, Pa.
Clapp & Jones, Hudson, N.Y.
Cole Brother, Pawtucket, R.I.
Corbett, Thomas M., & Co., Milwaukee, Wis.
Cory, Watts G., Amsterdam, N.Y.
Dennison, John N., Newwark, N.J. & Reading, Pa.,
Eaton & Prince, Chicago, Ill.
Ebsintgenich, Rochester, N.Y.
Ettenger & Edomond, Richmond, Va.
Gould, R. J., Newark, N.J.
Harrell, Richard, Paterson, N.J.
Haskell & Jones, Albany, N.Y.
Haupt, Jacob L. New Brunswick, N.J.
Heaton, A. E., New York, N.Y.
Hill & Moorlen, Augusta, Maine
Hinckley & Drury (Boston Locomotive Works) Boston, Mass.
Hunneman & Co., West Roxbury, Mass.
Hunsworth, Eakins & Co., Philadelphia, Pa.
International Fire Engine Co., Elmira, N.Y.
Ives, John A., & Brother, Baltimore, MD.
Jeffers, William, Pawtucket, R.I.
Johnson, J. B., Portland, Maine
Jucket & Freeman, Roxbury, Mass.
Kimball Carriage Works, San Francisco, Ca.
Knapp Machine Works, Pittsburgh, Pa.
Knoulson & Kelly, Troy, N.Y.
Knowles Steam Pump Works, Warren, Mass.
Knowlton, John L., Sharon Hill, Pa.
LaFrance Manufacturing Co., Elmira, N.Y.
Landell, J. W. or S. W. & Co., Philadelphia, Pa.
Lane & Bodley, (Sold out to Ahrens), Cincinnati, Ohio
Latta, A. B. & E., (Sold out to Lane & Bodley,) Cincinnati, Ohio.
Lee & Larned, (Novelty Iron Works), New York, N.Y.
Lowry, Joseph L., Pittsburgh, Pa.
Manning, Thomas, Jr., & Co., Cleveland, Ohio
Mansfield Machine Works, Mansfield, Ohio
McKay & Gallagher, East Boston, Mass.
Merrick, E. V., & Son, Philadelphia, Pa.,
Moorlen, Frank & Co., Augusta, Maine
Murray & Hazelhurst, Valtimore, MD.
Nelson, James, Pittsburgh, Pa.
Nichols, B. S., Burlington, Vt.
Nichols, John, Paterson, N.J.
Nott, W. S., & Co., Minneapolis, Minn.
Nussey, Joseph, Patterson, N.J.
Osborne-Killey, Mfg., Co., Hamilton, Ont., Canada
Philadelphia Hydraulic Works, Philadelphia, Pa.
Phoenix Iron Works, Charleston, S.C.
Poole & Hunt, Baltimore, MD.
Reaney & Neafie, Philadelphia, Pa.
Ronald, John Brussels,. Ont., Canada
Shawk, Abel, Cincinnati, Ohio
Sheppard Iron Works, Buffalo, N.Y.
Silsby Manufacturing Co., Seneca Falls, N.Y.
Sintzenich, E.B., Rochester, N.Y.
Skidmore, P. S., Bridgeport, Conn.
Smith, James, New York, N.Y.
Taylor, A. B., & Co., New York, N.Y.
Union Machine Co., Fitchburg, Mass.
Van Ness, William H., New York, N.Y.
Waterous Engine Works, Co., St. Paul, Minn.
West, S. A., San Francisco, Ca.



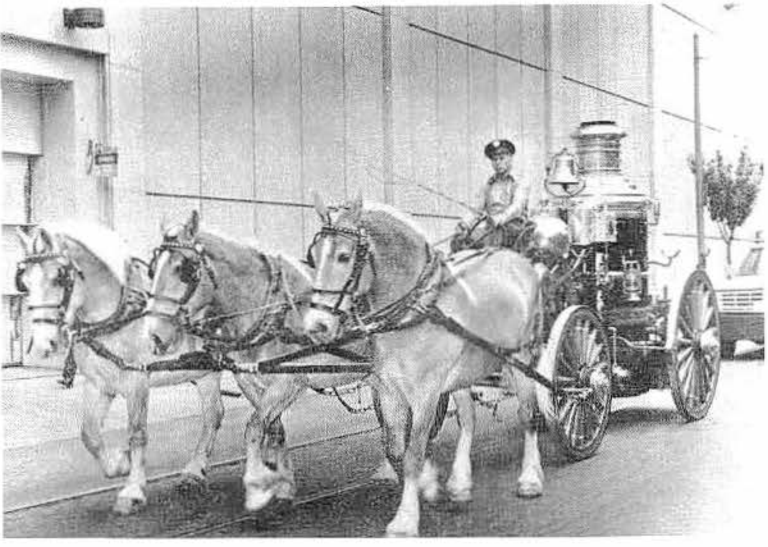
A team of black Percherons is hitched to an American steam fire engine built in 1896. It is owned by the Wissahickon Fire Co. of Ambler, Pa., and is participating in the Allentown, Pa. Firemen's Parade of August 1977. The American Fire Engine Co. was a merger of Ahrens Mfg. Co. of Cincinnati, Ohio; Button Co. of Waterford, N.Y.; the Clapp-Jones Fire Co. of Hudson, N.Y. and Silsby Mfg. Co. of Senaca Falls, N.Y. After this merger, the American Fire Engine Co. merged with the American La France Co. of Elmira, N.Y. In 1903, the American La France Fire Engine Co. was organized out of the former International Fire Engine Co., which had been a conglamorate of nine fire equipment companies, including the American Fire Engine Co. of Senaca Falls, N.Y. This new firm moved its headquarters from New York City to Elmira, N.Y. The American Fire Engine Co. developed the "American" engine from the Ahrens engine, which became the "Metropolitan" in 1896. When American La France was formed by the merger of American Fire Engine Co. and La France Fire Engine Co., the "Metropolitan" became its principle product.

An old print, supplied by the Louisville, Ky., Fire Department, shows its 1895 American steam fire engine hard at work during a turn of the century fire in that city. Note that the city of Louisville at that time used cisterns to supply water for firefighting, and that this unit is pumping from one of these underground water sources. American engines were built by the American Fire Engine Co. of Cincinnati, Ohio.

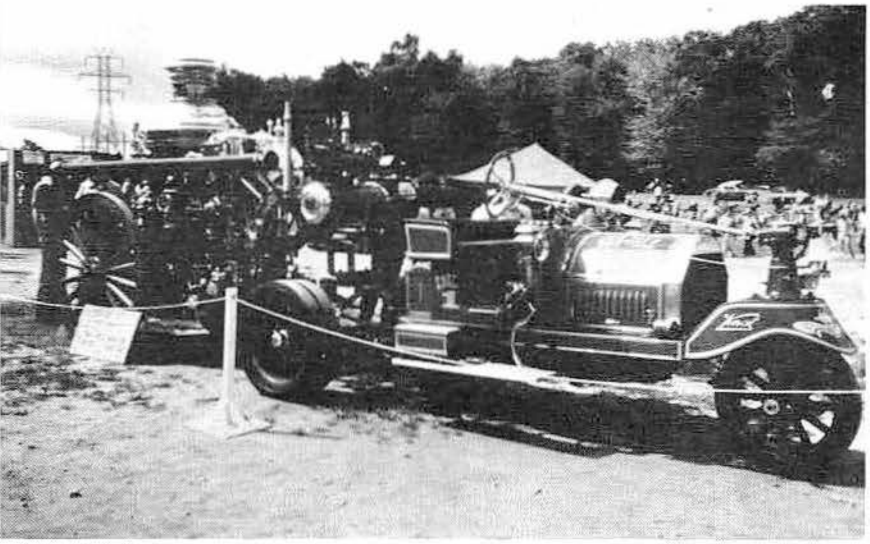


The American La France "Metropolitan" steam fire engine was built by the American La France Fire Engine Co. of Elmira, N.Y. It is second size, in running order, and pumps 700 gallons per minute. The American La France Fire Engine Co. built steam fire engines from 1904 to 1915. — photo taken in New York state by Stuart Lathrop, Allentown, Pa.

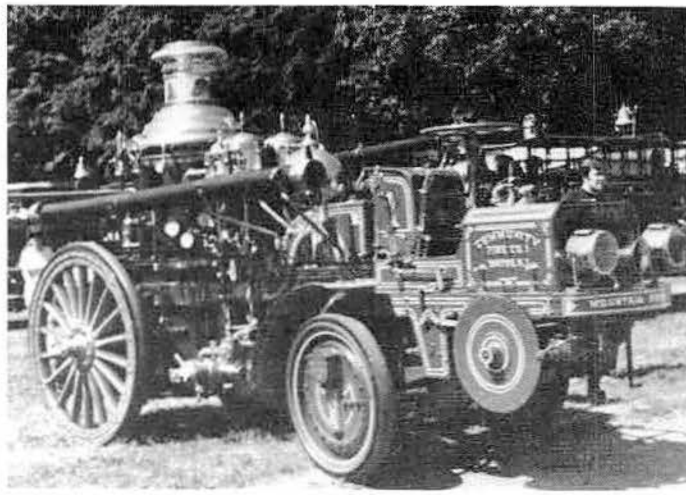
These three Philadelphia Fire Department draft horses are of mixed breed (Clydesdale-Percheron) and a light fawn color. Left to right, nine year old Jack, six year old Jean and eleven year old Walt. Each horse weighs about 2,000 pounds. They are pulling a "Metropolitan" fire engine built by the American La France Co. It served the Philadelphia Fire Department from 1907 to 1923 at Engine Co. No 1. It is the same type pumper that was used when the company was converted from a volunteer to a paid organization in 1871. It has a pump capacity of 900 gallons per minute and weighs 7,800 pounds — photo taken and supplied by the Philadelphia Fire Department.



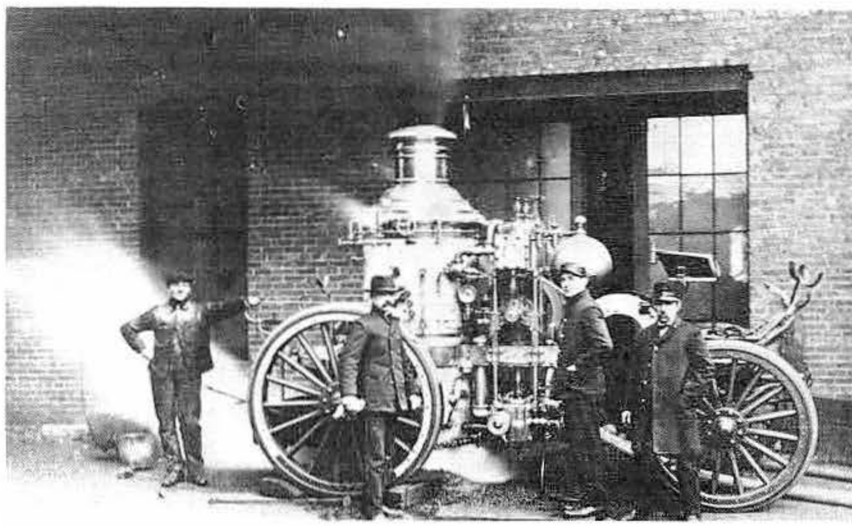
A team of three black Percherons is hitched to a 1906 American La France steam fire engine, engine serial #3059, first size, 900 GPM. It was built by American La France Fire Engine Co. of Elmira, N.Y. American, La France, Gleason & Bailey, Rumsey, Manning, Holloway, Babcock Fire Extinguisher, Chicago Fire Extinguisher Mfg. Co. and Macomber Chemical Fire Extinguisher Co. consolidated and formed the International Fire Engine Co. In 1903, the American La France Fire Engine Co. was organized out of the former International Fire Engine Co. — photo taken in New York by Stuart Lathrop, Allentown, Pa.



Resting behind its three-wheeled Knox-Martin tractor is this 1899 American La France Metropolitan steam fire engine. Bearing serial No. 2676, it is a second class or second size engine of 700 GPM capacity. Originally built for the City of San Francisco by the American Steam Fire Engine Co., it was sold to the City of San Jose, Cal., about 1912 and tractorized about 1914. The Knox-Martin tractors were designed primarily to convert horse-drawn fire equipment into motorized units. The steering gear extended out over the hood to a gear box above the single front wheel. The 3-wheel configuration was used in order to provide a tighter turning radius. These tractors were built jointly by Knox Automobile Co. of Springfield, Mass., and Martin Carriage Works of York, Pa. Such units remained in production until about 1915. This steamer rig is still owned by the San Jose Fire Department.



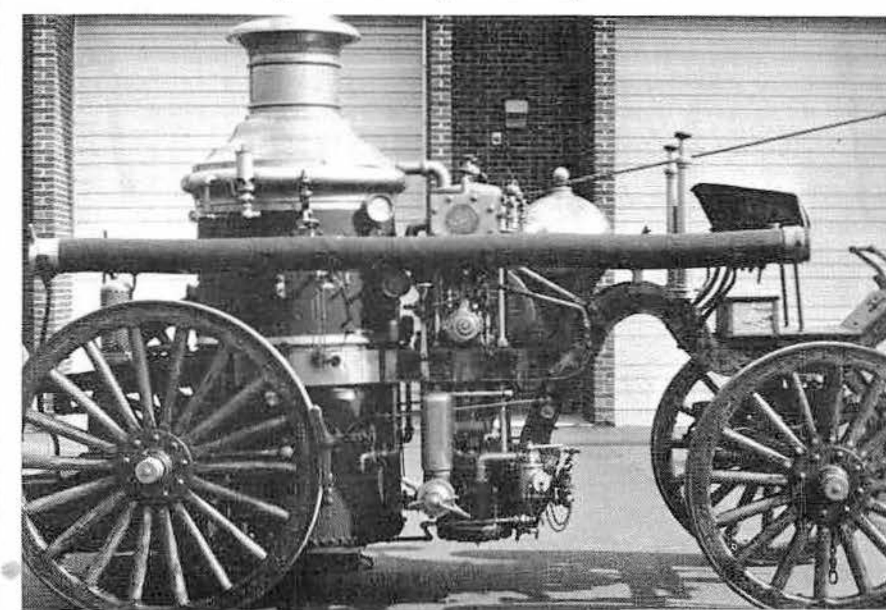
As did Knox-Martin, the Christie Front Drive Motor Co. of New York City also specialized in building tractors to convert horse-drawn fire equipment into motorized rigs. However, unlike the Knox-Martin units, which could be driven on their own without the trailing apparatus, the Christie units were two-wheel affairs that had to be hooked to a trailer to operate. The front wheels provided both power and steering. This rig is an 1899 American La France Metropolitan steamer, and a 1911 Christie tractor. The steamer is a 700 GPM second size unit bearing serial No. 2640. It originally served the city of Los Angeles, but is now owned by the Community Fire Company of Wayne Township, N.Y.



Another old photo from the files of the Louisville, Ky., Fire Department shows that department's Aherns steam fire engine. The engine was built in 1900 by the Ahrens Mfg. Co. of Cincinnati, Ohio. Taken in 1903, the photo shows some of the department's engineers testing the unit behind the repair shop in order to make sure it was in perfect order. The Louisville Fire Department maintained a regular schedule of such tests, and the area behind the repair shop, where such work was conducted, was known as the test pit, according to Lt. Col. Lawrence Luvisi, Assistant Chief, Louisville Fire Department.

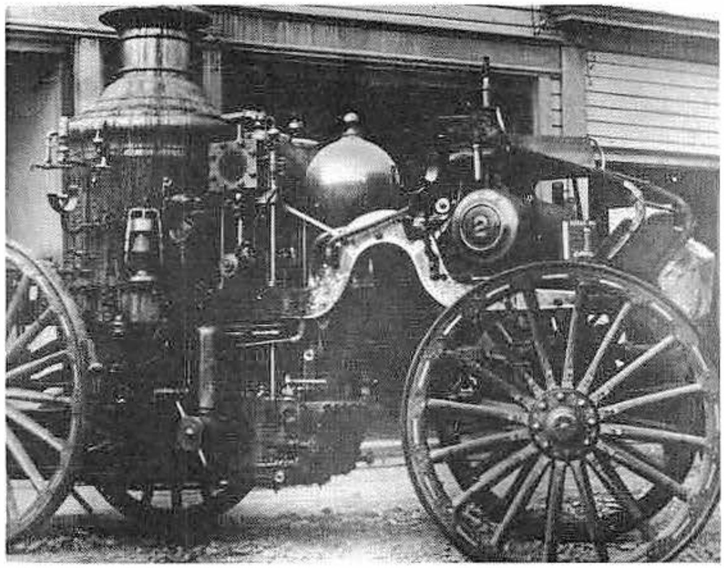
The 1901 Ahrens pumper, owned by the Allentown, Pa., Fire Department proves that it is still able to throw a solid stream of water. This photo was made in 1976 by Tel Toulomelis of the Call-Chronical newspaper, but even today, the Ahrens can pump as good as when it was in service. Fireman Robert Ockovic is blowing the whistle, which releases the burst of steam visible in front of the smoke stack.

This Ahrens steam fire engine was built in 1901 by the Ahrens Mfg. Co. of Cincinnati, Ohio. Ahrens built about 700 steam fire engines from 1868 to 1892. It is now owned by the Allentown, Pa. Fire Department.



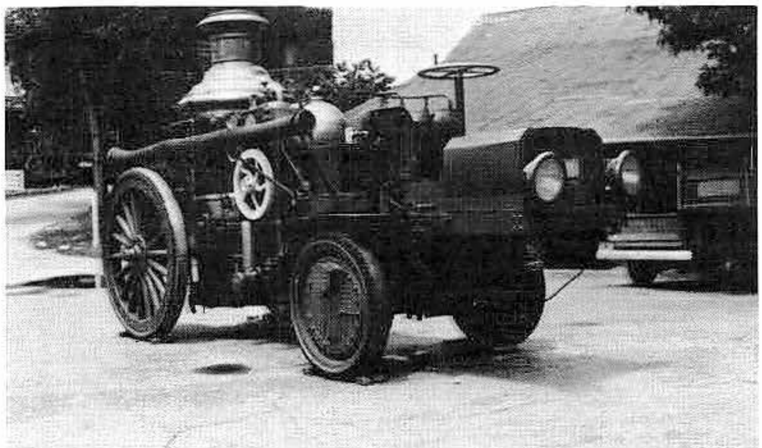
Steam Fire Engine Manufacturers

This photo, from the fantastic collection of Dan Martin of Naperville, Ill., shows a team of Belgian draft horses hitched to an 1895 Ahrens steam fire engine. The unit bears engine serial No. 2364. It is a single pump affair of the Fourth size, capable of pushing 450 gallons per minute. It is participating at a fireman's muster at Leipsic, Ohio.

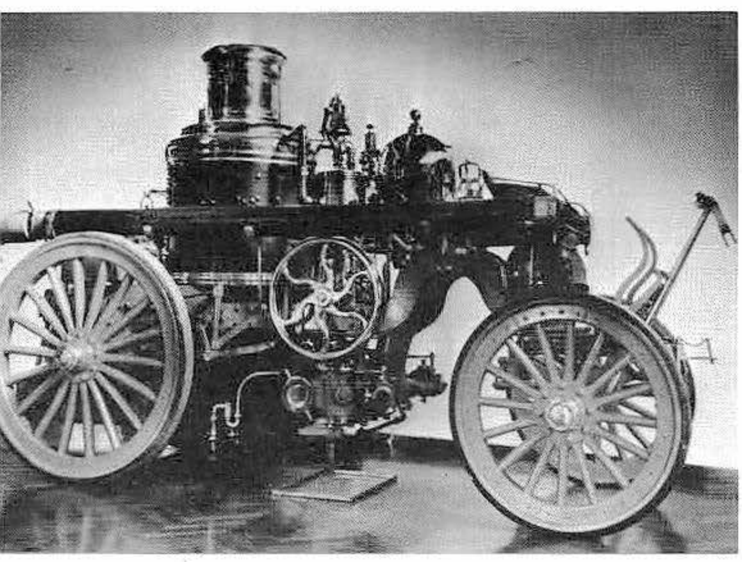


The only known steam fire engine left in the state of Alaska is this 1907 Ahrens-Fox Continental, still owned by the Valdez Fire Dept. The unit, bearing serial number 131, was built by Ahrens-Fox in Cincinnati, and was shipped on order to the Valdez Fire Department. It arrived there in 1908, and remained in service unitl 1935.

A 1913 Ahrens-Fox "Continental" steam fire engine, engine serial No. 199, with a 1913 Christie tractor. Originally from Tauton, Mass., it is now kept in the Edaville Railroad Museum, South Carver, Mass. The Ahrens-Fox Fire Engine Co. of Cincinnati, Ohio, built about 100 steam fire engines between 1906 and 1914. In 1906 Charles H. Fox left the Cincinnati Fire Department and joined John P. Ahrens to form the Ahrens-Fox Fire Engine Co.

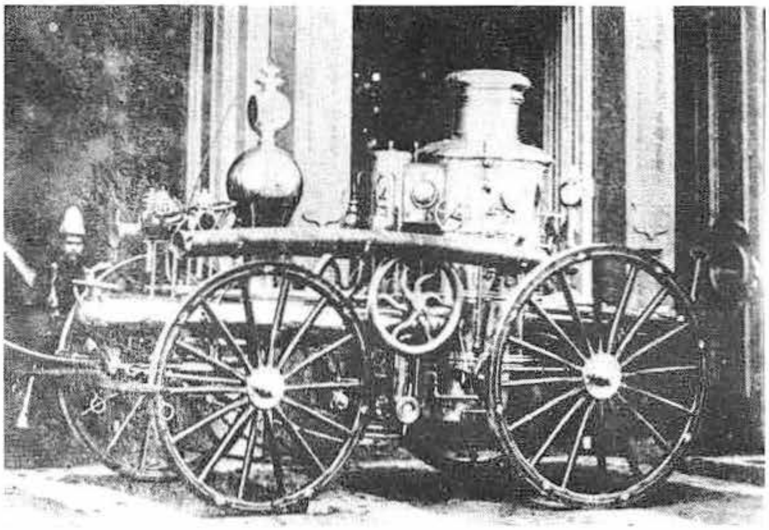


On display at the Henry Ford Museum, Greenfield Village, Dearborn, Mich., is this beautiful Amoskeag steam fire engine that was built in 1906 by the Amoskeag Mfg. Co. of Manchester, N.H. Note the interesting crane neck frame design. The unit, bearing engine Serial No. 809, is classed as a first size, 900 gallon per minute pumper. It utilizes a double pump. The engine was first put into service by the Detroit, Mich., Fire Dept.

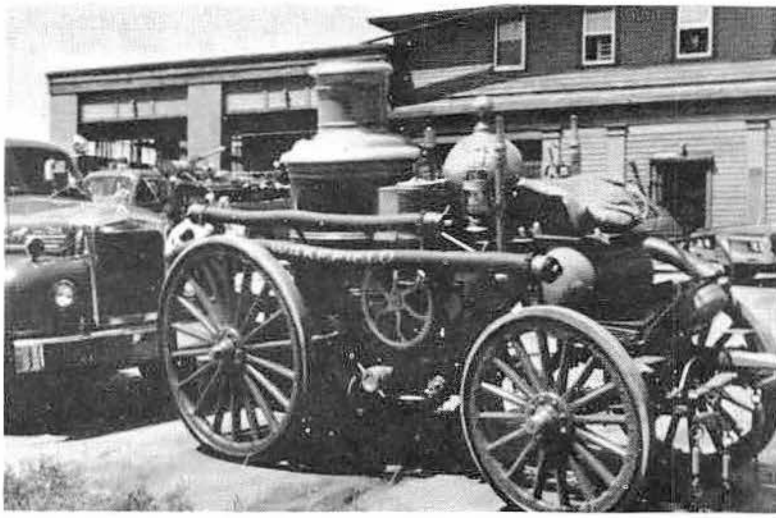


Mr. Messerschmiht's team of Belgian draft horses, about 1,900 lbs. each, are hitched to a 1866 Amoskeag steam fire engine. Mr. Messerschmiht lives in Mayerstown, Pa. The steam fire engine is owned by the Mountaineer Hose Co. of Minerville, Pa. The Amoskeag, Mfg., Co. of Manchester, New Hampshire, builders of textile machinery and locomotives, entered the steam fire engine field in 1859. Amoskeag sold abut 854 steam fire engines.

Steam Fire Engine Manufacturers



One of the earlier Amoskeag steam fire engines is this unit, bearing engine serial No. 146. Considered a second size engine, it is a single-pump type, with a "U" tank frame. It was built in 1865 by Amoskeag Mfg. Co., and put into service at Philadelphia, Pa., Fire Co. No. 36 at Spring Garden. It remained in service there until March of 1871. It was sold to the Hampden Fire Co. No. 6 at Reading, Pa., in 1872.

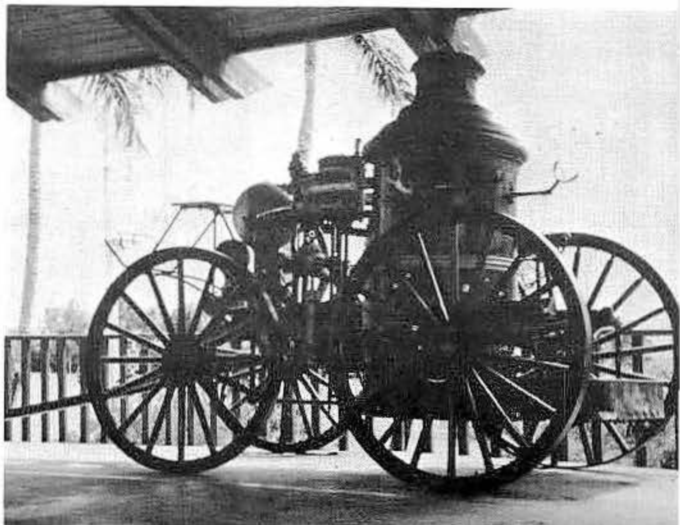


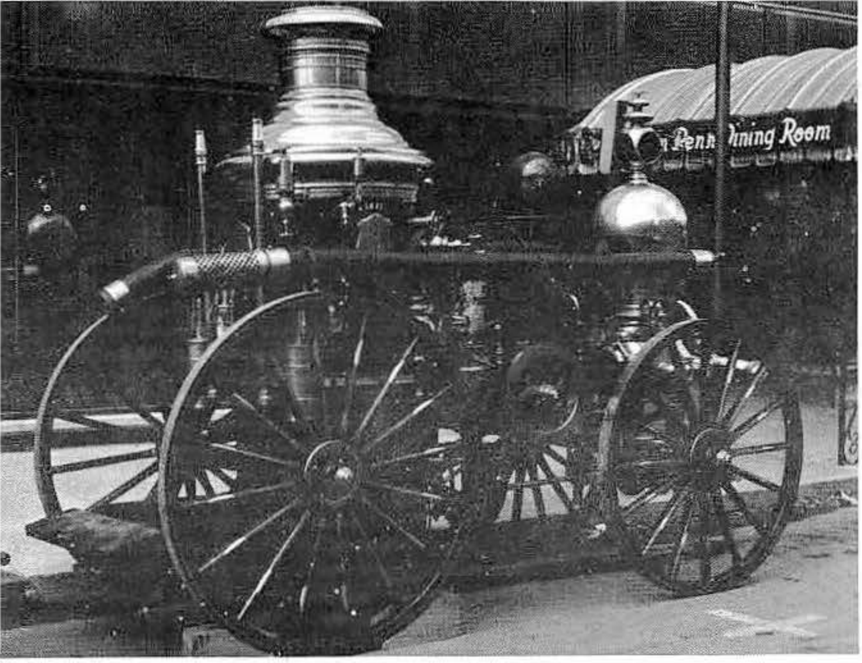
Wakefield Fire Engine Co. No. 1 of Wakefield, Mass. is today the proud owner of this 1907 Amoskeag steam fire engine. the unit is a second size engine, and bears serial number 831. It was manufactured in Manchester, N.H.

Hitched to a Button steam fire engine is this attractive team of lighweight draft horses. Their owner, Ray Mays of Schaeffertown, Pa., is holding the reins. The horses weigh about 1,400 pounds each. The Button Co. built about 200 steam fire engines between 1862 and 1892. This unit, built in 1889, bears serial number 213. It is considered a fifth size engine, of 250 gallons per minute pump capacity. Owned by the Union Fire Co. of Belmar, N.J., the engine remained in service until 1924. The team and engine are shown here getting ready to participate in the 1977 Fireman's Parade in Allentown, Pa.

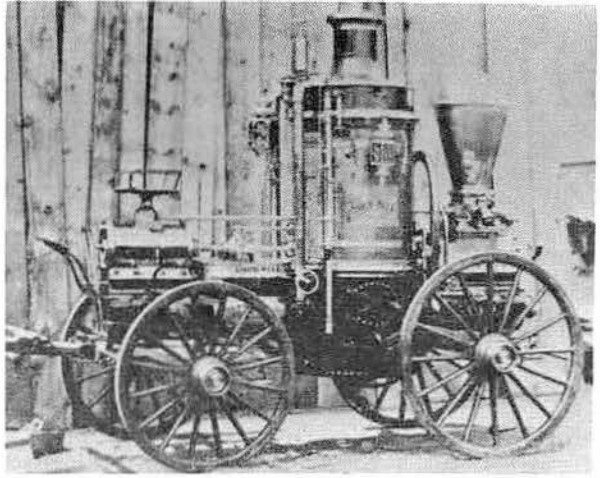
Search Dalrymple's lightweight Belgian draft horses from Hampton, N.J., are hitched to a Clapp & Jones steam fire engine. The horses weigh about 1,600 pounds each. The unit was built by Clapp & Jones of Hudson, N.Y., in 1868. It is still owned by Union Fire Co. No. 1 of Frenchtown, N.J., which purchased the steamer second hand in 1888 and kept it in commission until 1928. During its 40 years of service, it ansered 48 fires and 7 false alarms. It is the largest of the three models of steamers built by Clapp & Jones during that era, and weighs a grand 8,000 pounds, making it no lightweight for the horses to pull. It is shown here ready to participate in the 1976 Bicentennial Fireman's Parade at Allentown, Pa.

Now on display on the porch of Tony's Fish Market Restaurant at Ft. Lauderdale, Fla., this steamer wound up a long way from home. It is a Canadian steam fire engine, originally built by John Ronald of Brussels, Ontario. The unit today is in partially restored condition, but lacks many of the accessory parts with which it was once fitted.

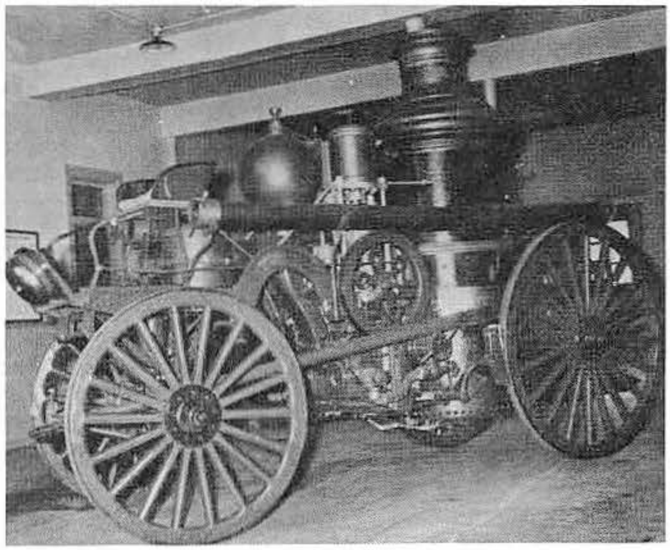




A beautifully restored piece of equipment is this Clapp & Jones steam fire engine owned since new by the Stroudsburg Fire Department of Stroudsburg, Pa. Clapp & Jones, which built about 600 steam fire engines in the Hudson, N.Y., plant between 1862 and 1892, turned out this unit in 1871. It was sold to the Stroudsburg company for $4,100, with the amount being financed by the sale of 7% municipal bonds. According to the company's original records, one of its pre-service tests consisted of "drawing water through 500 feet of hose and pumping a stream of water 160-feet into the air in the face of a heavy wind and through a damp, murky and extremely dense atmosphere, while using a 1 $\frac{3}{16}$ inch nozzle. Fire company engineers say that even the most modern fire equipment of today, facing similar restraints, cannot do too much better than the record set by this unit on its initial tests. Stroudsburg fire historians say the pumper was kept warm by pumping hot water through it when it was not in use. When a fire call would come in, a coal fire was quickly started in the burner, and steam pressure would be up to working capacity by the time the engine reached the fire scene. The steam, of course, powered the pumping mechanism which forced the water through the hoses at high pressure. The steamer was last put to use in 1927 to fight a fire at the Stroudsburg High School — 56 years after it was built.



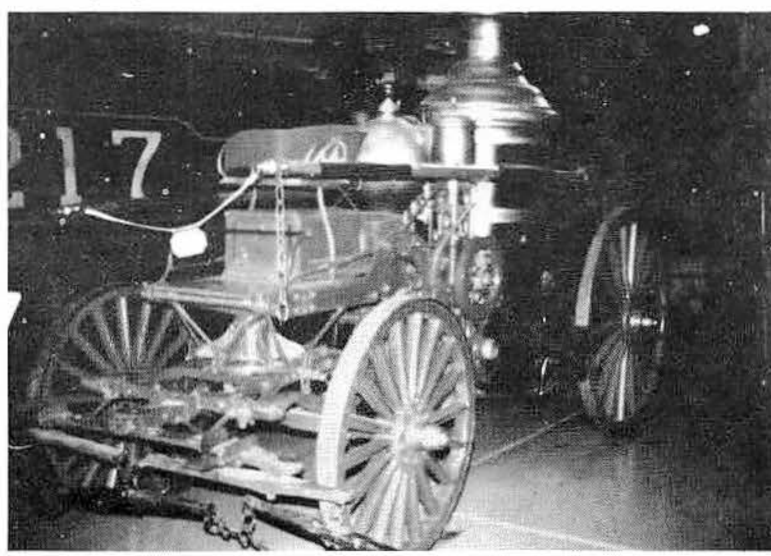
Goodwill Fire Co. No. 20 of Philadelphia, Pa., was the proud owner of this I.P. Morris steam fire engine built in 1859. This engine was considered a second size unit. On this engine, the boiler sits between the wheels, and the fly wheel is in a horizontal position forward of the boiler. Ahead of the flywheel and under the driver's seat is the steam piston. Rods running through the tubes in the boiler connect the steam piston with the pump, which is located under the air chamber over the rear wheels. The bad feature of this design was that the steamer could only be stoked at the scene of a fire, occcasionally resulting in some delay in getting the hoses into action. As far as can be ascertained, the Issac P. Morris Co. of Phildelphia only built three steamers between 1859 and 1860.

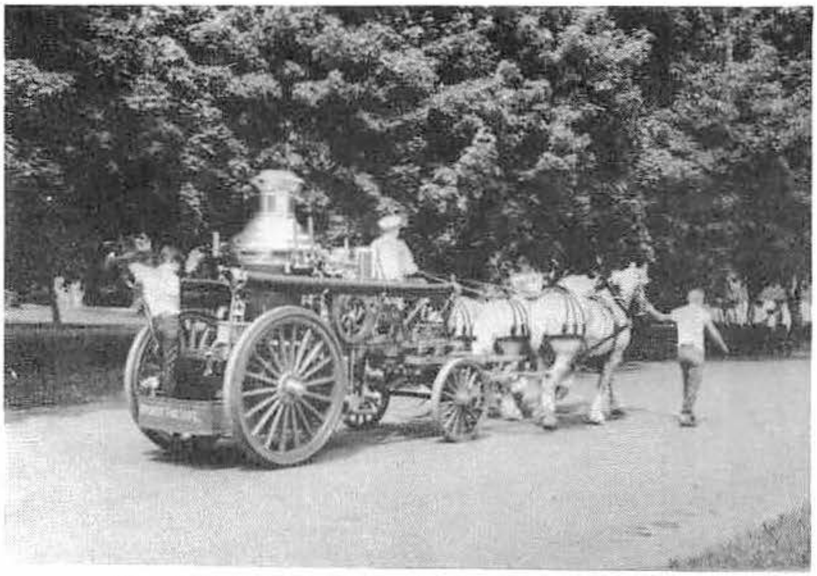


The Williamsport Fire Dept., of Williamsport, Pa., is the proud owner of this 1886 La France steam fire engine. Built by the LaFrance Mfg. Co. of Elmira, N.Y., it is considered a third size engine, of 600 gallons per minute pump capacity. LaFrance built about 350 steam fire engines between 1874 and 1900.

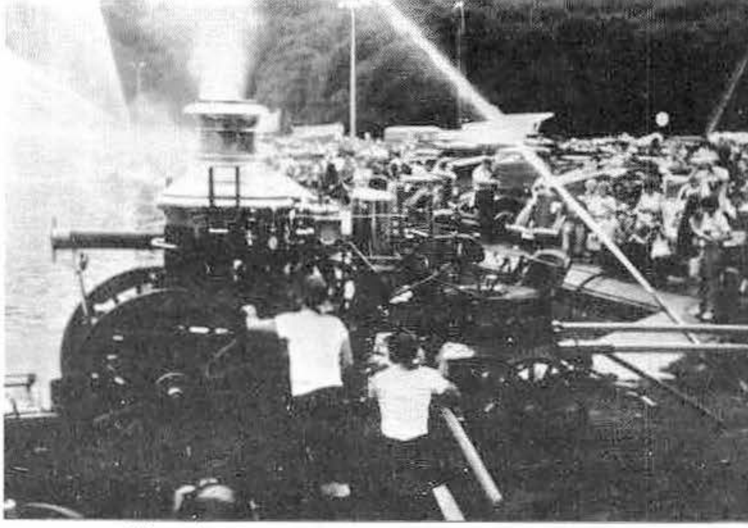
The B & O Railroad Museum at Cumberland, Md., maintains on display this 1892 LaFrance steam fire engine. It wears serial number 246. Like most LaFrance engines, it was fired from the rear, meaning that it could be stoked on its way to a fire and thus be fully steamed and ready to pump when the crew arrived on the scene.

Mounted to a 1916 Christie tractor is this 1906 LaFrance steam fire engine. Originally a horse-drawn engine, the unit was tractor mounted when its original owners, the Baltimore Fire Department, began its mechanization era. Bearing serial number 510, the steamer is a 900 gallon per minute pumper. It was originally commissioned as Engine No. 9 on the Baltimore Fire Department, but later became reserve engine No. 3. It is on display today at the Fire Museum of Maryland at Lutherville.





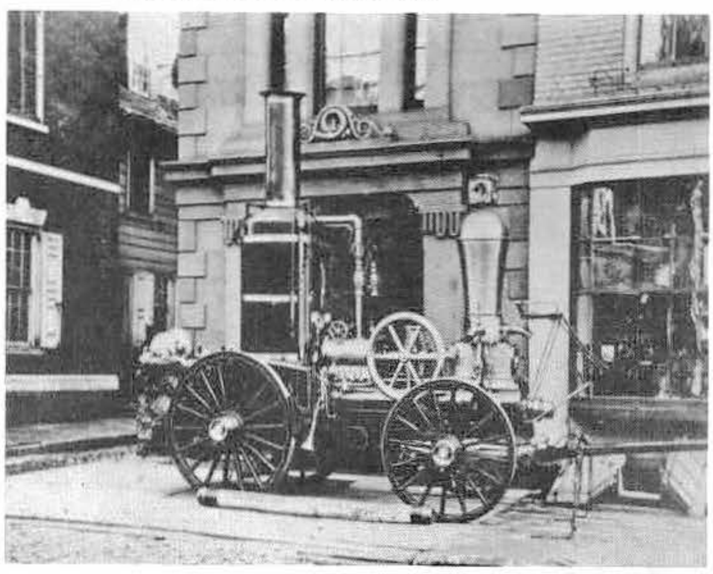
Donald Day's three Belgian draft horses from Franklin, N.J., are hitched to a 1906 Nott steam engine, built by the W. S. Nott & Co. of Minneapolis, Minn. The horses weigh about 2,000 pounds each. This particular unit is owned by the Wyckoff Fire Co. of Wyckoff, N.J. and is seen here participating in a Fireman's parade in Allentown, Pa.



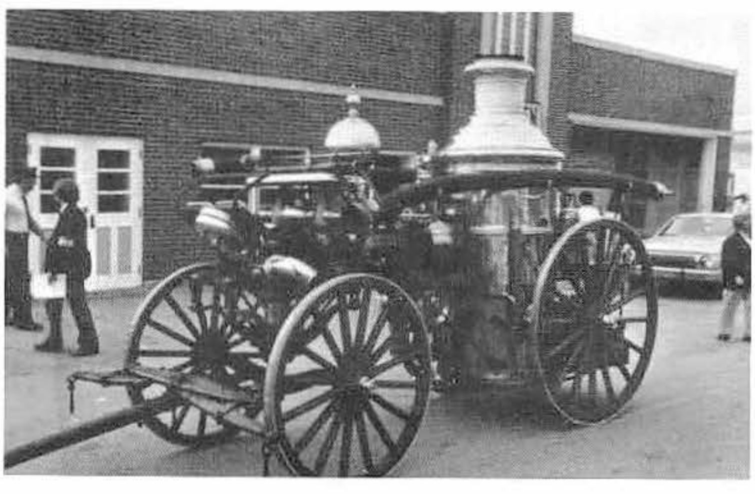
Throwing a powerful stream of water during a fireman's muster in New York is the 1906 Nott steam fire engine owned by the Wyckoff, N.J., Fire Co. This engine bears serial number 633. In the annals of fire fighting lore, the name of John Ericsson stands out. Erricsson was born in Sweden, and during his earlier years became an engineering officer in the Swedish Army, rising to the rank of Captain. His main interest was steam engines, and in 1826 he was given leave of the Army and permitted to travel to England, where he introduced a steam engine of his own. During his residence in England, he produced his most lucrative invention — the steam fire engine. This invention was wheeled into action during the burning of the Argyle Rooms in 1829. Newspaper reports of the era said that "for the first time, fire was extinguished by the mechanical power of fire." The encouragement of an American Navel officer resulted in Ericsson moving to the United States in 1839, where he spent the rest of his active life perfecting steam engine and steam fire engine designs.

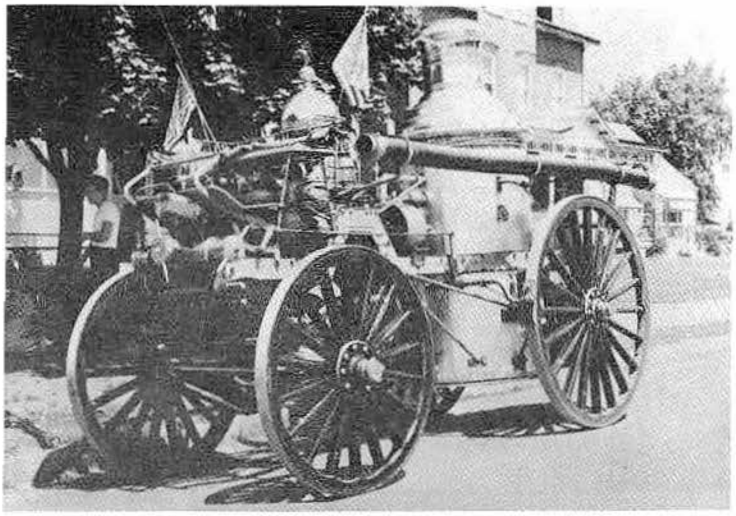
The Poole & Hunt Co. of Baltimore, Md., built about 14 steam fire engines between 1858 and 1868, including this second size steamer. It was first put into service in 1860 by the Washington Fire Co. No. 14 of Philadelphia, Pa. On March 15, 1871, Engine Co. No. 11 of Philadelphia took over the unit and used it until 1888, when it was replaced by a new Silsby steam fire engine.

The first steam fire engine to be built by the Reaney & Neafie Co. of Philadelphia, Pa., was this first size steamer, bearing serial number One. It was delivered in 1858 to Philadelphia Hose Co. No. 1. When that company disbanded in 1870, the steamer was sold to Philadelphia Insurance Partol No. 1. It was used until 1930 to pump out basements after fires. It has since been purchased and restored by Insurance Co. of North America, and is on display at that company's headquarters in Philadelphia. Reaney & Neafie appear to have built about 40 steam fire engines between 1857 and 1869.

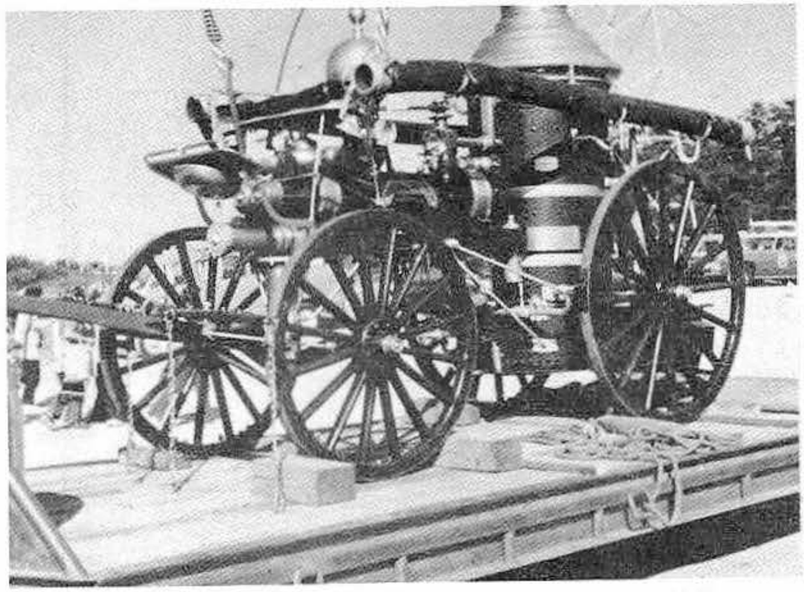


Volunteer Fire Co. of Hanover, Pa., now is the owner of this 1882 Silsby steam fire engine, built by the Silsby Mfg. Co. of Senaca Falls, N.Y. This engine is of the fourth size, and wears serial number 688. Silsby built about 1,000 steam fire engines between 1856 and 1892.





Although the name Silsby is virtually unheard of today, except among steam fire engine buffs, the Silsby Mfg. Co. of Senaca Falls, N.Y., was a highly respected unit among eastern fire fighters around the late 1800s. This is an 1882 model Silsby, of the second size. It wears serial number 684. Today it is owned by the Liberty Fire Co. of Spring City, Pa.

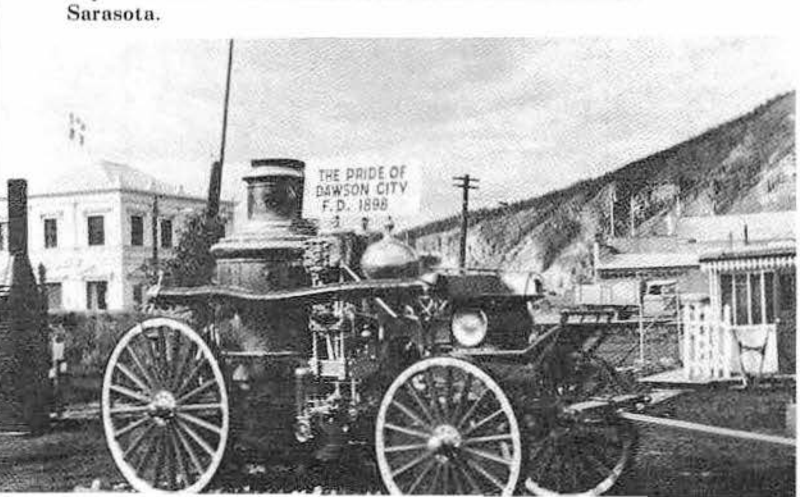


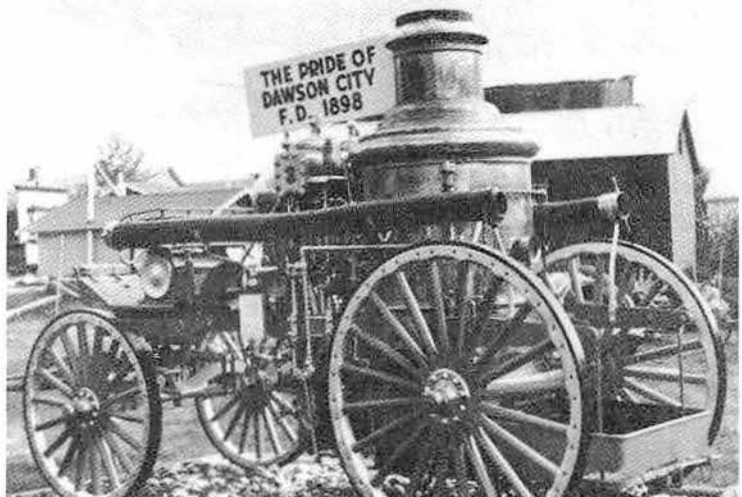
Living today in Brandford, Conn., is this beautifully restored 1878 Silsby steamer. Wearing serial number 588, this unit is of the fourth size, having a 500 gallon per minute pump capacity. It is shown here loaded on a flatbed trailer for participation in a local parade.

The Bloomsbury Fire Co. of Bloomsbury, N.J. owns this restored 1897 Waterous steam fire engine, built by the Waterous Engine Works of St. Paul, Minn. The engine is here hitched to a lightweight team of Belgian draft horses owned by Search Dalrymple of Hampton, N.J. The horses weigh about 1,600 pounds each. The Waterous Co. was a family operation started in 1884 by C. H. Waterous. The company began to build different types of machinery, including steam fire apparatus. The company grew rapidly, and the twin sons of C. H. Waterous, Frank J. and Fred L. soon moved to Winnipeg, Canada, and opened a branch office of the company in that city. This company also produced aerial ladder trucks, chemical fire engines, and later, motorized apparatus. The production of steamers started about 1886.

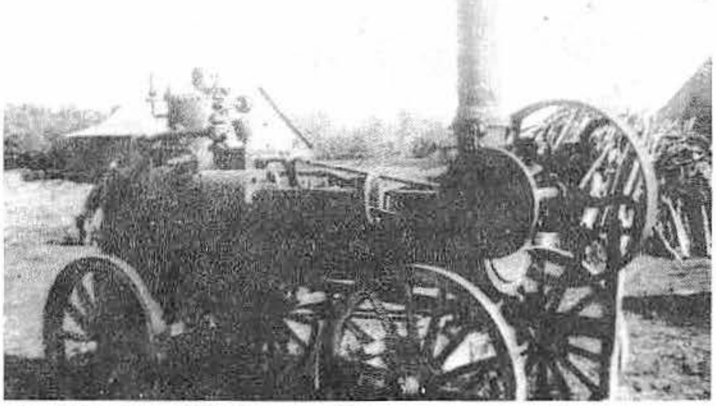
"The Pride of Dawson City," is this Waterous steam fire engine built by the Waterous Engine Works of Brantford, Ont. The number one size engine was built in 1900, despite the claim on the sign that it is an 1898 model. Although owned since new by the Dawson City Fire Dept., the engine today is owned by Parks Canada, Klondike National Historic Site, Dawson City, Yukon. Parks Canada is a branch of the Canadian government's Dept. of Indian & Northern Affairs. Since the City of Dawson was far removed from supply depots, and was almost impossible to reach in winter, extra parts for the engine had to be held in reserve for emergencies. These parts consisted of pumps, pistons, and other special equipment that was impossible to duplicate in the heart of the Yukon. Even today, transportation isn't the most convenient matter in that part of the world. The two accompanying photos of Dawson's steam fire engine were taken by Thomas W. McAlister, Chief of the Valdes, Alaska, Fire Dept., and had to travel by dog sled for at least the first part of their trip southward — the Yukon is sure a world removed from Sarasota.

This is the left side of "The Pride of Dawson City," built in 1900 by Waterous Engine Works, and shipped directly from manufacturer to Dawson City, Yukon. Records show that at one time there were three steam fire engines in Dawson City. Two still remain there, but a third was bought by a miner and taken to his claim where it was used as a pumping engine. John A. Gould of the Dawson Museum & Historical Society reports that at the turn of the century, a fire broke out shortly after one of these machines was delivered by river steamer. The fire engine was in Dawson City — the only trouble was that it was still unassembled, and in its crate on a riverfront warf. Nevertheless, the crew tore open the crate, and had the engine assembled and working in time to help fight the fire. Not having the time to stoke the boiler in the normal way, the crew fired up the machine by using slabs of bacon for fuel.

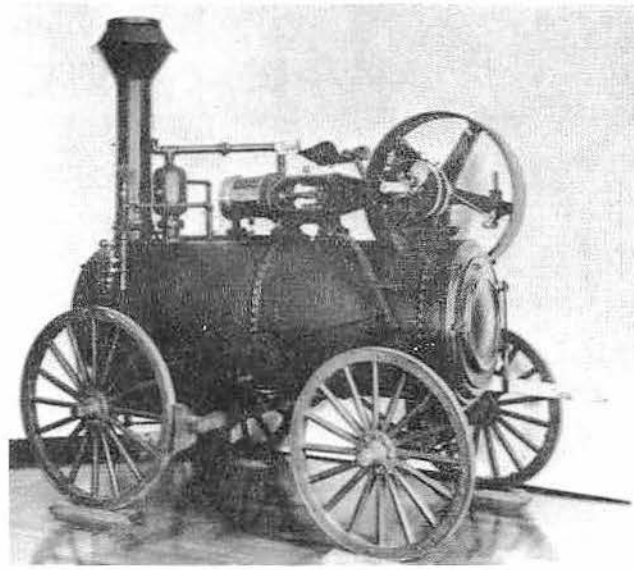




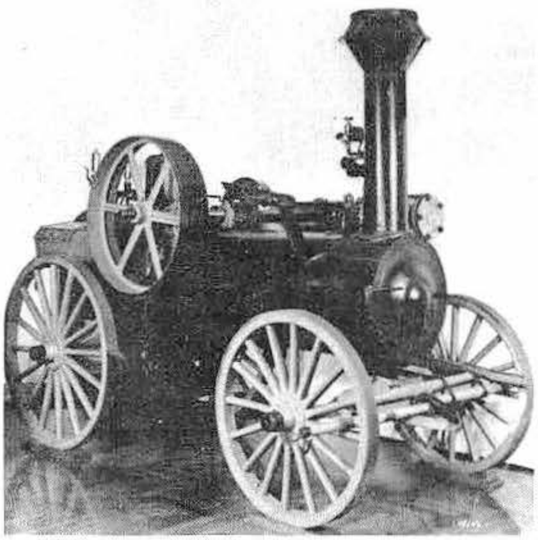
Portable Steam Engines



The "American Chief" was a 10 horsepower portable steam engine built around the turn of the century by Anderson Foundry & Machine Works of Anderson, Ind. This unit survived until 1941, when it "went to war" by being cut up for scrap in a Pennsylvania wrecking yard.



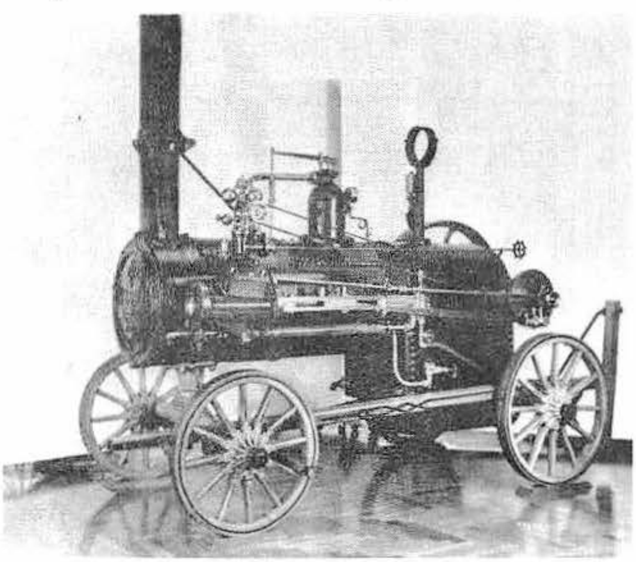
The B. W. Payne & Sons Co. of Corning, NY, built this portable steam engine in 1880. Marketed under the name B. W. Payne & Sons, the unit used a return flue boiler and a piston valve. It is on display today at the Henry Ford Museum, Greenfield Village, Dearborn, Mich.

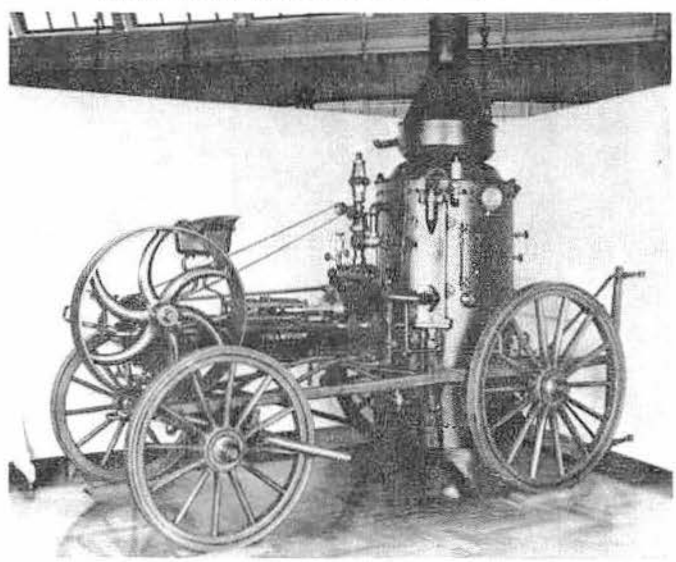


The Charles Perrigo & Co. of Groton, N.Y., built this style portable steam engine in 1885. Marketed under the name Charles Perrigo, the unit used a forward mounted piston on the left side and a large, rearward mounted flywheel on the right. This unit is on display at the Henry Ford Museum, Greenfield Village, Dearborn, Mich.

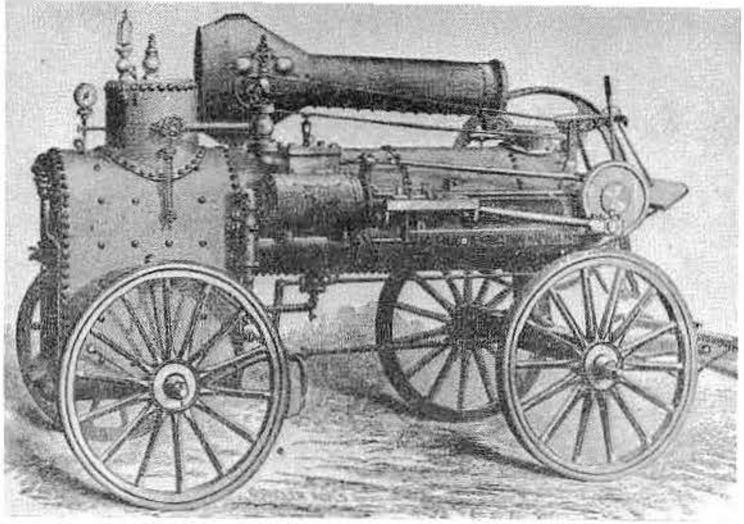
A rather unusual but practical design is evident on this D. June portable steam engine, built in 1880 by the D. June & Co. of Fremont, Ohio. The upright boiler and large forward mounted flywheel give the rig a rather strange appearance. The unit is equipped with a rocking valve and a water-type spark arrester on the smokestack. D. June portables and steam traction engines were the first engines in the United States to be equipped with spark arresters on the smokestacks. Although upright boilers always appeared more at home on stationery engines rather than on portable units, the upright design did offer some advantages over the horizontal type of boiler. Among these advantages was the fact that the upright never exposed the crown sheet, and thus greatly reduced the chance of explosion. Also, the flues would last longer because they weren't as exposed to the corrosive effects of caked soot as were horizontal flues. Thirdly, using cold water, an upright boiler would get up steam in about 20 minutes, or about half the time of a horizontal boiler of the ear.

Looking very much like an uncompleted railroad locomotive is this Chillicothe portable steam engine, built in 1880 by the Chillicothe Foundry & Machine Works of Chillicothe, Ohio. At the rear, just above the boiler's fire door is an unusual eccentric crank which operated the valve gear of this engine. The unit is on display at the Henry Ford Museum, Greenfield Village, Dearborn, Mich.

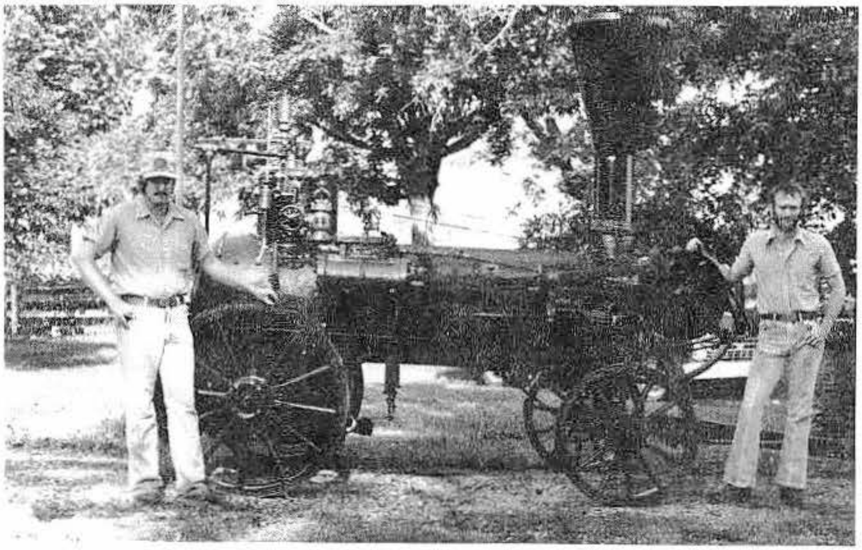




The Reynolds Museum of Wetaskiwin, Alberta, Canada, owns one of the oldest portable steam engines in existance today. It is this A. Garr model, bearing serial number 403, built in 1855 by the A. Garr & Co. of Richmond, Ind. Typical of Garr engines, the flywheel is mounted ahead of the smokestack, which is missing from this engine. Abram Garr was born near Richmond, Ind. He as a cabinet maker, millwright, and worked for a time in the machine works known as the Spring Foundry, owned by J. M. and J. Hutton. Abram Garr purchased the Spring Foundry in 1849 and changed its name to A. Garr & Co. He continued to be an active member of this firm until his death in 1894.



An 1881 catalog of the Eagle Machine Works of Indianapolis, Ind., shows this new Eagle portable steam engine. In this illustration, the smokestack is shown in its folded position, ready for travel. This unit used a right-side mounted piston and a forward mounted flywheel.

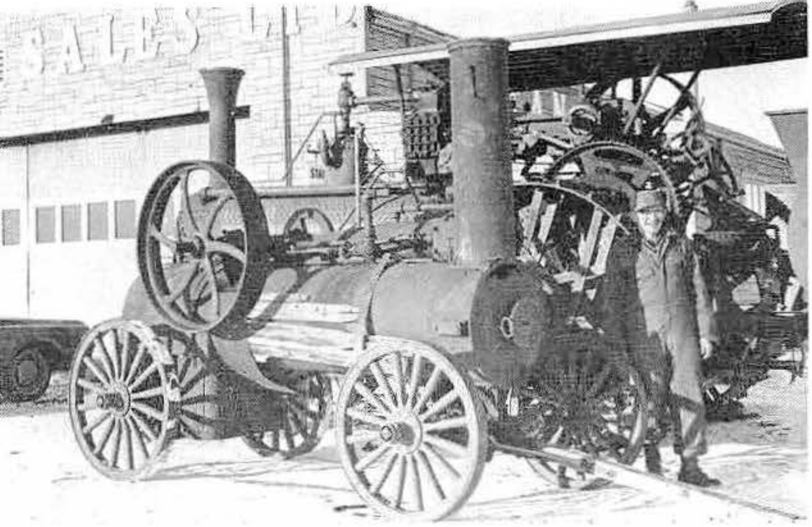


Al New and sons of Pendleton, Ind., are the proud owners of this restored Garr-Scott portable steam engine, built in 1864 by the Garr-Scott Co. of Richmond, Ind. The company's name was changed from A. Garr & Co. to Garr-Scott after William G. Scott joined forces with Garr during the 1860s. This 8 horsepower engine bears serial number 1497. There is a very definite similarity between this engine and the one owned by the Reynolds Museum, showing that portable steam engine design changed very little from one decade to another.

Looking like a big oil drum that sprouted some wheels, this 14 horsepower George White return flue portable steam engine was built in 1900 by George White & Sons Co. of London, Ontario, Canada. Today it is owned by the Reynolds Museum of Wetaskiwin, Alberta, Canada. George White, the founder of the company, was born in Devonshire, England. Visiting Canada on his wedding trip, he became delighted with the country and decided to stay and open a blacksmith shop. That was in 1857. Had the Whites not decided to visit Canada on their honeymoon, a name prominent in the annals of Canadian industry might never have developed.

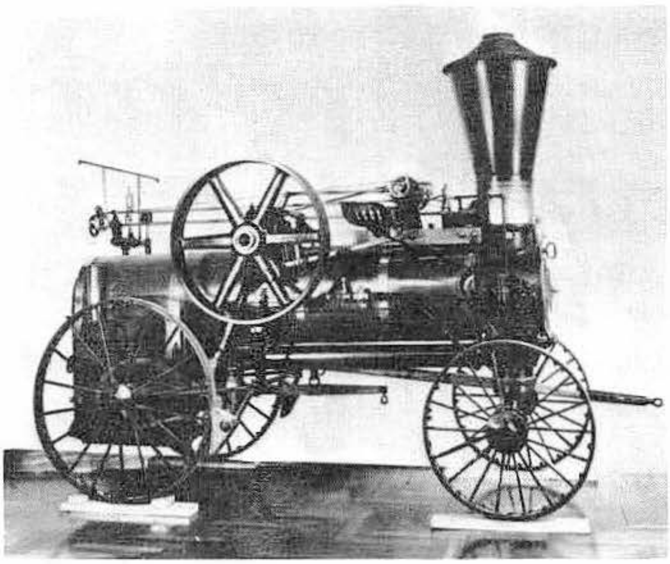
Of more sophisticated design than the return flue type is this George White direct flue portable steam engine. It was built in 1914 by George White & Sons Co. of London, Ontario. It is owned by the Reynolds Museum of Wetaskiwin, Alberta, Canada. During the late 1870s and 1880s, George White made serveral pioneer trips to the Canadian west and established his machines in that fast developing area. The first engines had to be shipped via U. S. railroads and hauled the long distance north by horses and oxen. After the Canadian Pacific Railway finally crossed the prairie, a large warehouse was built by the White Co. at Brandon, Manitoba, to serve western Canada.

Portable Steam



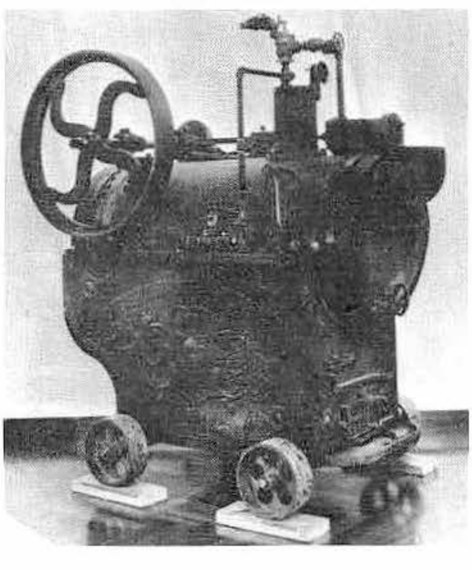
This Cornell portable steam engine was built in 1890 by the Haggert Bros. Mfg. Co. of Brampton, Ontario, Canada. Behind it is a 1910 Reeves 25-90 horsepower cross compound Canadian Special steam traction engine built by the Reeves Co. of Columbus, Ind. Both engines are part of the collection of the Reynolds Museum.

A very light-duty portable steam engine is this Herschell-Spillman upright boiler model, built in 1900 by the Herschell-Spillman Co. of New York. It was originally used to drive a merry-go-round operated by a travelling carnival. The flywheel is on the left side of the engine, while the U-pulley on the right side drove the cable connected to the merry-go-round. This unit is also owned by the Reynolds Museum.

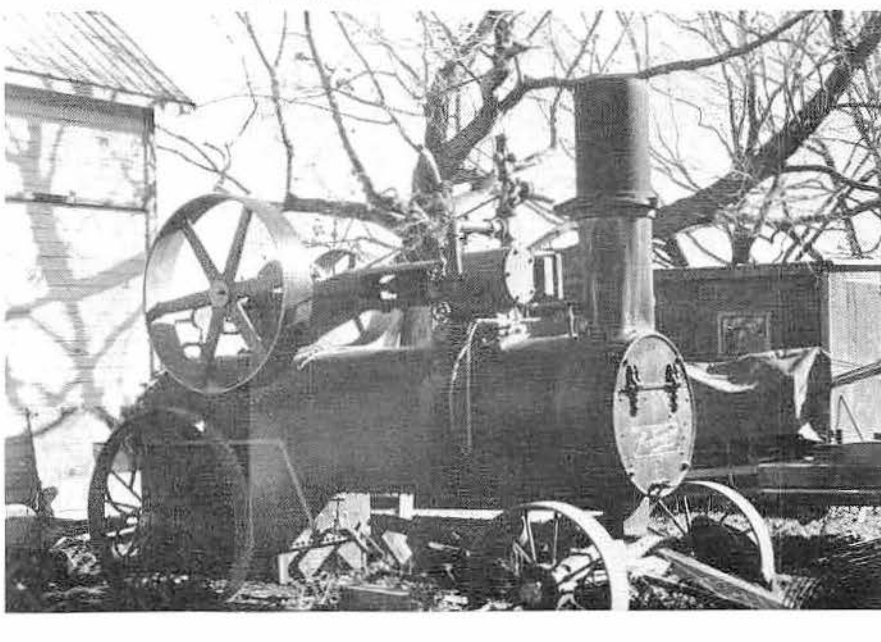


The Fishkill Landing Machine Co. of Fishkill, N.Y. built the Mills portable steam engine in 1885. The nicely designed unit was the work of Emory W. Mills, and in his honor, the unit bears his name. One of the improvements on this machine was the use of a fluid governor acting on the valve gear. This engine is equipped with a driver's seat and a foot brake to keep the unit from overriding the horses on a downhill run. Fishkill Landing Machine Co. was incorporated in February, 1853. This model is on display at the Henry Ford Museum, Greenfield Village, Dearborn, Mich.

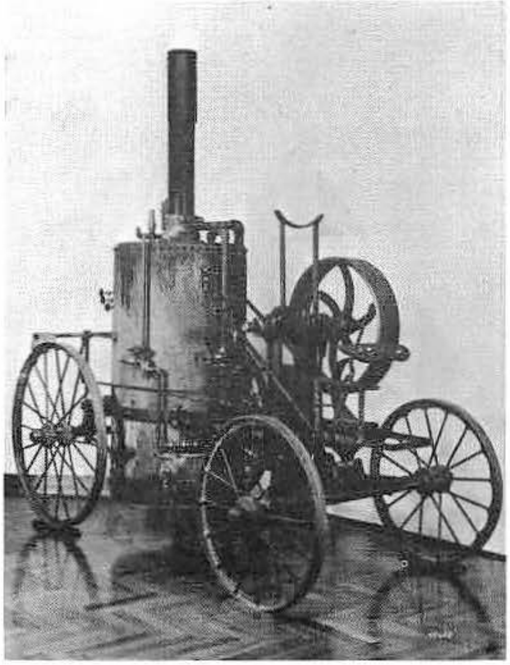
Obviously not too portable is this L. Sweet portable steam engine built in 1875 by the L. Sweet Co. of Wellsville, N.Y. Of the return flue boiler type, the engine is equipped with small iron "safe" wheels on fixed axles. Thus it could be moved only with much difficulty, and then almost exclusively on hard smooth surfaces. Its total movement was probably to vary the belt tension in some factory or sawmill job. The engine is today displayed at the Henry Ford Museum, Greenfield Village, Dearborn, Mich.



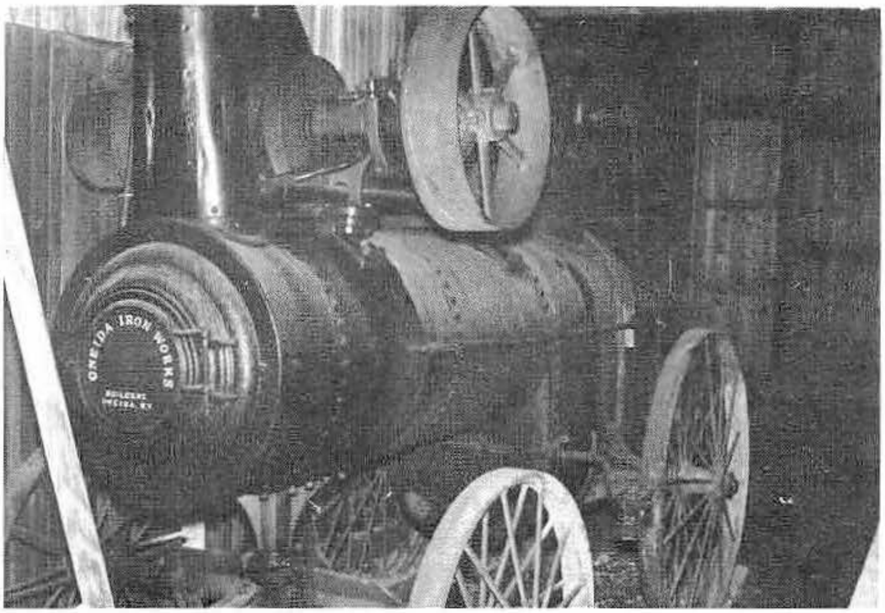
The Montmagny Mfg. co. of Monrmagny, Quebec, Canada, was a small producer of portable steam engines, with virtually all sales being in Canada. This Montmagny model, equipped with a locomotive type boiler and rear mounted flywheel, was built in 1917, almost at the end of the line for portable steam engines. It is owned today by the Reynolds Museum.



Portable Steam Engines



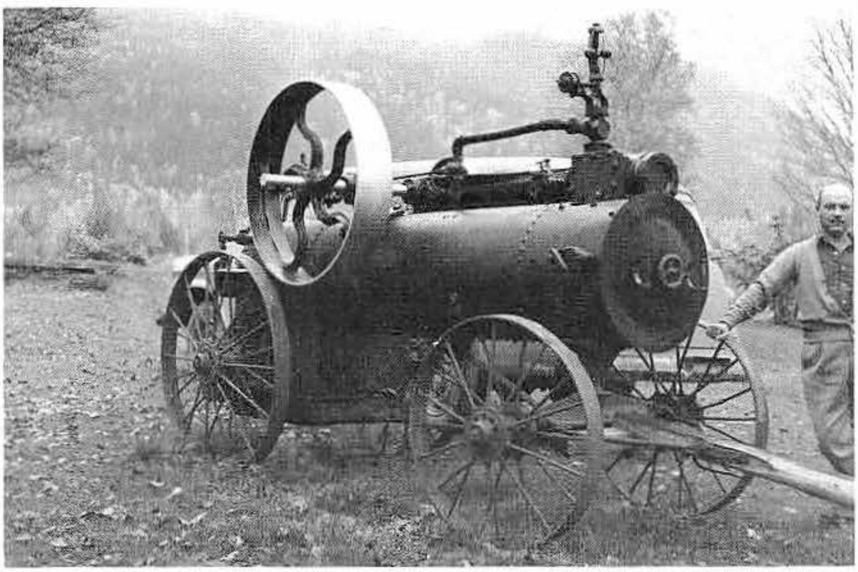
The Novelty Works of Cory, Pa., built this little upright boiler engine in 1885. Sold under the name Novelty, the unit is equipped with a driver's seat well ahead of its operating components. It has a piston valve and an automatic cut-off type of governor. It is on display at the Henry Ford Museum, Greenfield Village, Dearborn, Mich.



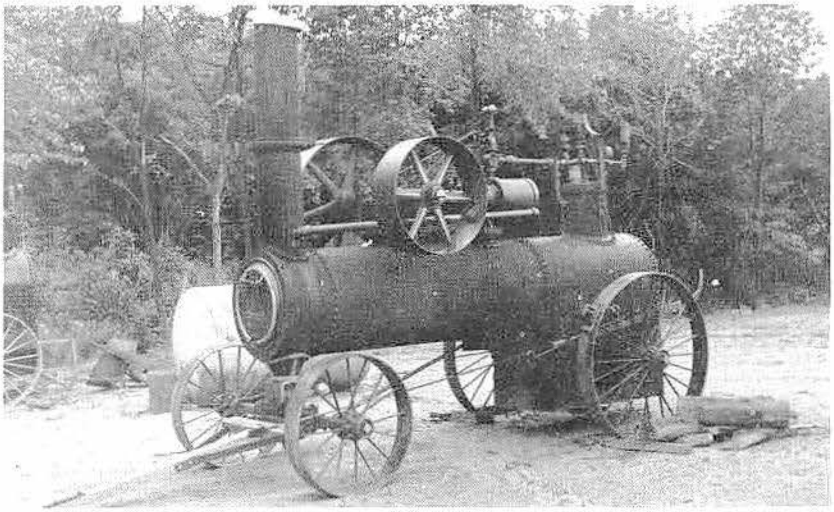
The Oneida Iron Works of Oneida, N.Y., built this locomotive type portable steam engine in 1885. The Oneida engines used twin flywheels, one on either side of the engine, with all running components mounted on top of the boiler. It is owned by the Reyolds Museum.

Ownens, Lane & Dyer Co. of Hamilton, Ohio, produced this locomotive-type portable steam engine in 1875. This engine is notable because it used an eccentric valve gear crank about 25 years before such units became common on railroad locomotives. The engine is equipped with a huge flywheel and a spark arrester of very large dimensions. Job W. Owens was born in Wales, but moved to Columbus, Ohio in 1824, and to Hamilton, Ohio in 1845. There, together with his partners, he formed the firm of Owens, Ebert & Dryer. In 1846 or 1847 the name of the company was changed to Owens, Lane & Dyer. The company built steam portable engines, steam traction engines, threshers, and virtually everything else in metal, from waffel irons to papermaking machines and sawmills. This engine is on display at the Henry Ford Museum.

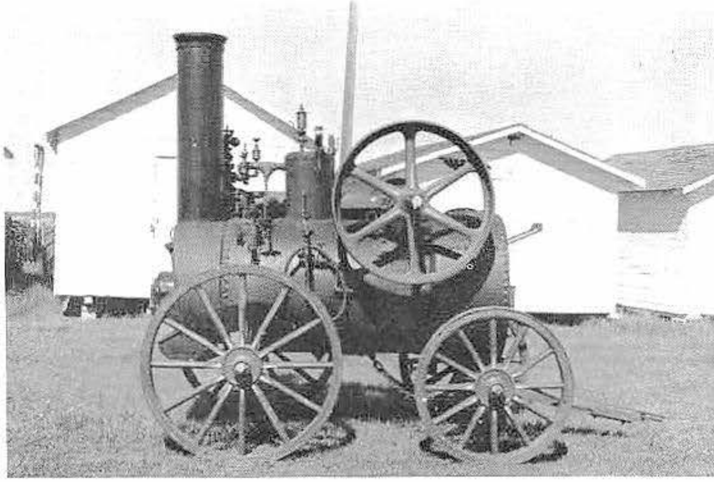
This Sawyer & Massey portable steam engine was built in 1895 by Sawyer & Massey Co. of Hamilton, Ontario, Canada. It used a direct flue boiler. The smoke stack is missing. It is owned by the Reynolds Museum, Wetaskiwin, Alberta, Canada. John Fisher, founder of the Sawyer & Massey Co., moved from New York State in 1835 and built a small shop in the pioneer hamlet of Hamilton at the western tip of Lake Ontario. He established an industrial enterprise that was destined to become one of the largest threshing machinery industries in Canada.



Portable Steam Engines

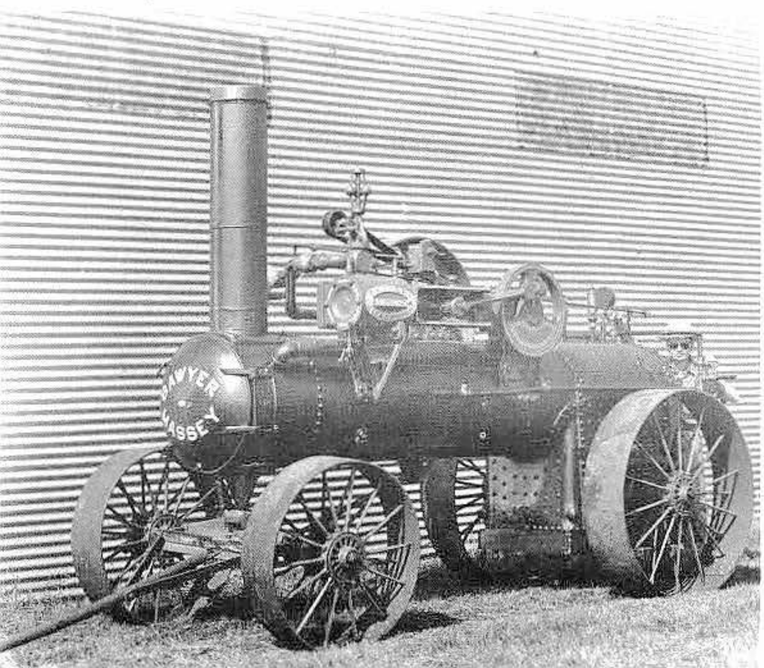


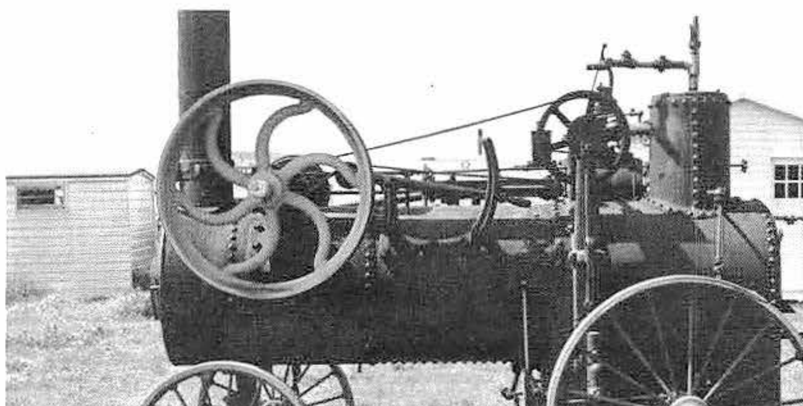
Very similar to the Oneida engine was the 12 horsepower portable steam engine built by the Orr & Sambower Co. of Reading, Pa. Although the exact production date of this engine cannot be ascertained, it is assumed that it was built in the 1890s. The Orr & Sambower unit, like the Oneida, used twin flywheels mounted on either side of the engine, and had all running gear mounted on top of the boiler. This engine is owned by Tom Downing of Ellwood City, Pa.



This Sawyer & Massey 12 H.P. "L.S.D." portable steam engine was built in 1897 by Sawyer & Massey of Hamilton, Ontario. It used a return flue boiler and was originally used in a sawmill in Ontario. It is owned by the Reynolds Museum. The first Sawyer portables and early traction engines were all of the return flue type. In the late 1880s a change was made to the open bottom, locomotive type boiler without a dome. Hundreds of little 13 H.P. simple, single cylinder, side mounted engines were built in the 1890s. Soon Sawyer & Massey was turning out 18, 20, and 22 H.P. engines for the eastern trade.

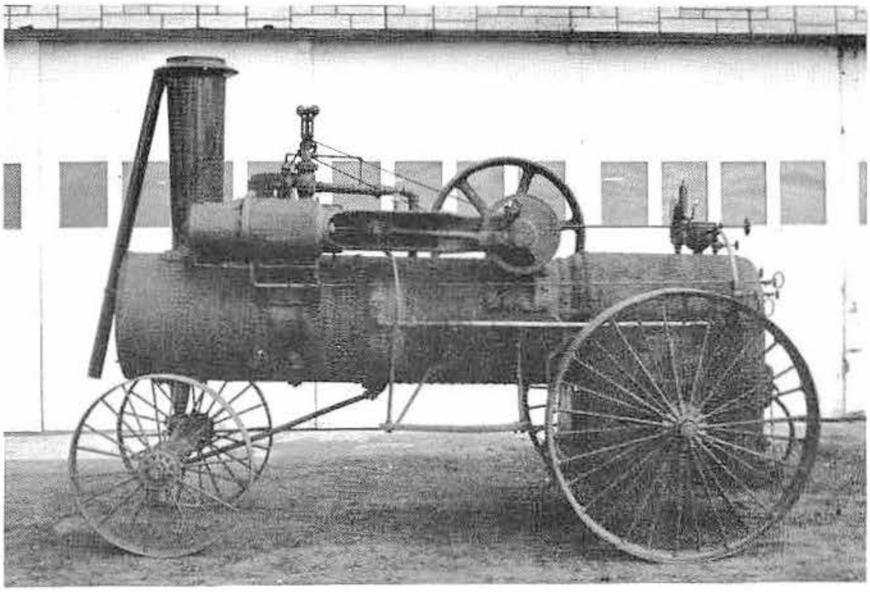
By 1915, steam traction engines had been perfected to a very high degree and gasoline tractors in all sizes were becoming increasingly popular. It would seem that by then, a large portable steam engine that had to be dragged around by horses would have no place on the market whatever. Yet, in 1915, Sawyer & Massey was producing this model of its 30 horsepower portable steam engine, with no traction gear attachments whatsoever. Probably the machine was designed for sawmill operations, where it would have to be moved only occasionally, if at all. Regardless, it must have put some severe strain on a very large team to move this monster around, especially if the ground was soft. In 1892, H. A. Massey, president of the Massey-Harris Co., became associated with the Sawyer firm of Hamilton, Ontario. The firm's name was changed to Sawyer-Massey Co. at that time. All engines built after 1910 had Sawyer-Massey in large cast letters, forming a complete circle on the smake box doors.





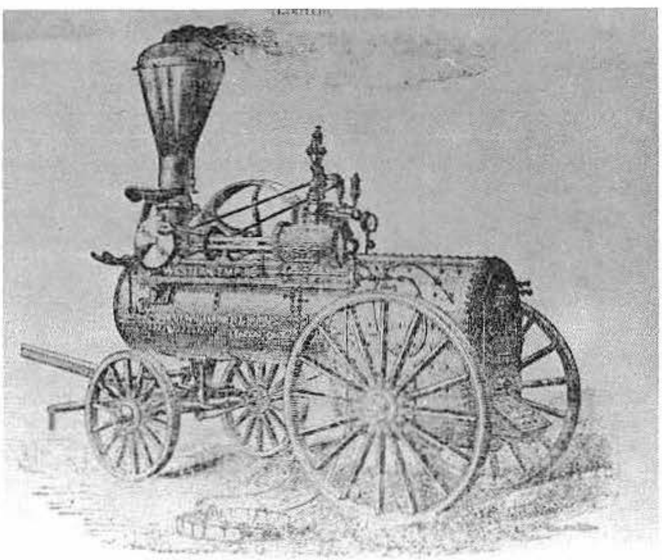
This Scheidler portable steam engine was built in 1900 by the Scheidler Machine Works of Newark, Ohio. It was mounted on iron wheels with hard steel spokes and wrought iron tires shrunk over iron rims. It is now owned by the Reynolds Museum. With the decline in the demand for steam agricultural engines, the Scheidler plant became more and more a custom machine shop, building its last few engines around 1925. The principal building of the Scheidler works still stands on 1st Street, presently occupied by the Electric Wholesale Co.

Portable Steam Engines

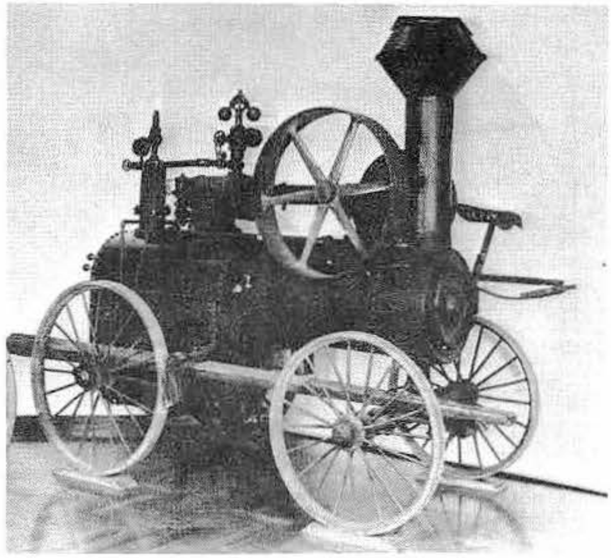


A relatively large machine, insofar as portable steam engines go, is this 17 horsepower Sawyer & Massey engine built in 1901 in Hamilton, Ontario. It is of the tandem compound, side mounted, rear crank type of engine. In the early 1860s the company began to make portable steam engines, and in 1887 added horse drawn farm machinery to its output. In that year also, Sawyer & Massey became Canadian agents for Aveling & Porter road rollers made in England.

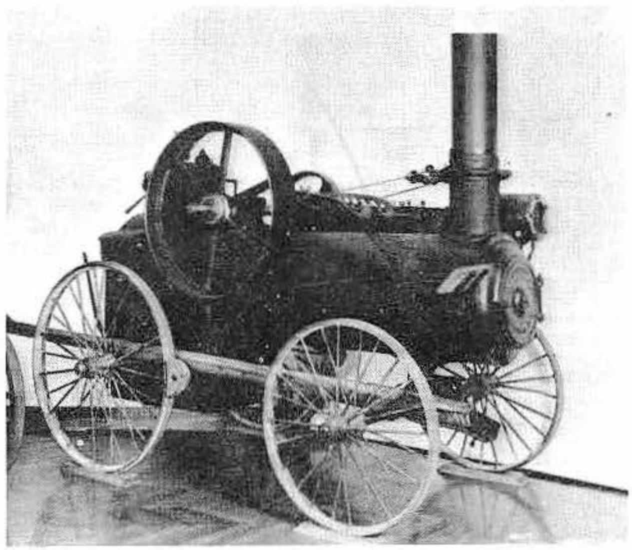
The Stevens portable steam engine was built in 1890 by the A. W. Stevens & Son Co. of Auburn, N.Y. Like many later portables, it is equipped with a cast iron driver's seat up forward. It is also equipped with a foot brake. A. W. Stevens began the manufacturer of the celebrated Stevens threshing machines and horsepowers in 1842 at Geona, N.Y. Later the company began to manufacturer portable steam engines, single cylinder steam traction engines, water wagons, the New Stevens threshers, and Monarch tenders. This Stevens is on display at the Henry Ford Museum, Greenfield Village, Dearborn, Mich.



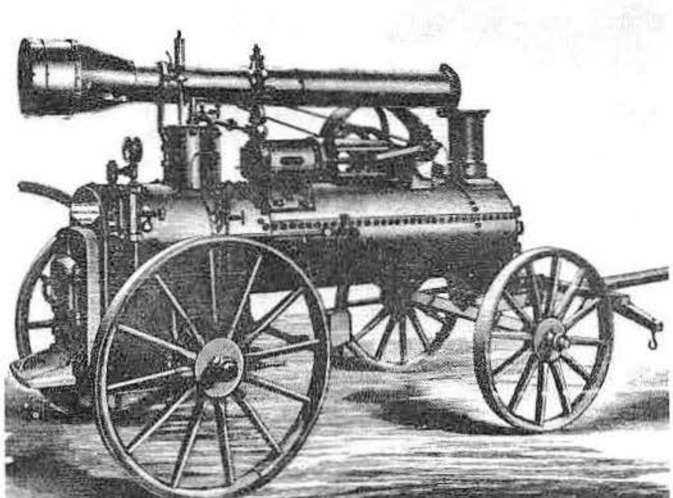
Stevens, Turner & Burns Foundry & General Mfg. Co. of London, Ontario, was the producer of a limited number of these Western Empire portable steam engines. The highly perched cast iron seat must have provided the driver with a few thrills on a downhill run. The company also built sawmills, separators, and farm wagons.



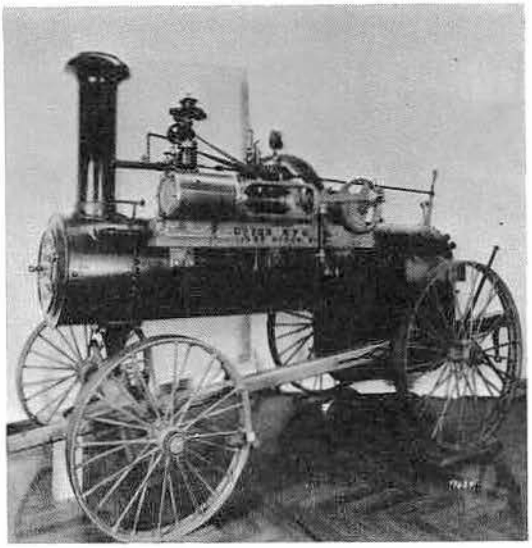
Steam Engine Co. of New York built this interesting little portable steam engine, equipped with two different size flywheels. Little is known about this engine, including when or wherer it was built. It is on display at the Henry Ford Museum, Greenfield Village.



The Tiger was an interesting though virtually unknown portable steam engine built by New Jersey Agricultural Works — location unknown. In common with similar portables of its day, it has a folding smokestack, simple single cylinder, and only one flywheel.



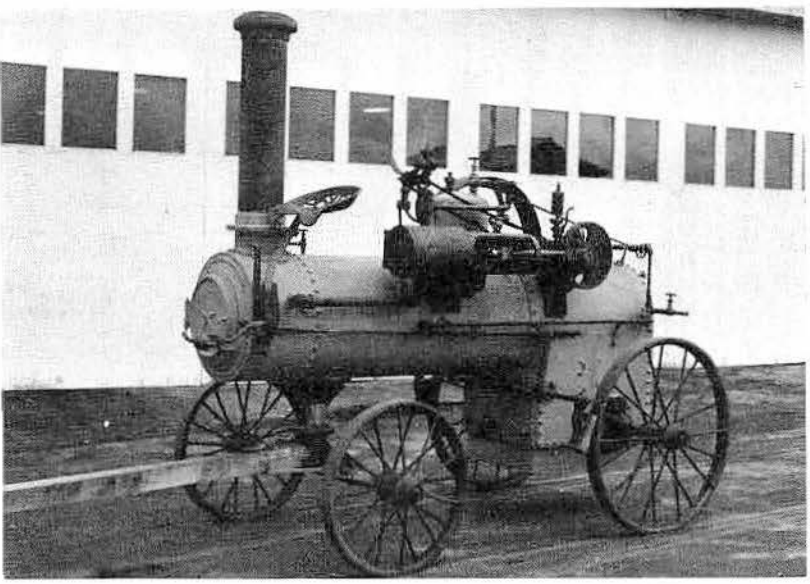
Portable Steam

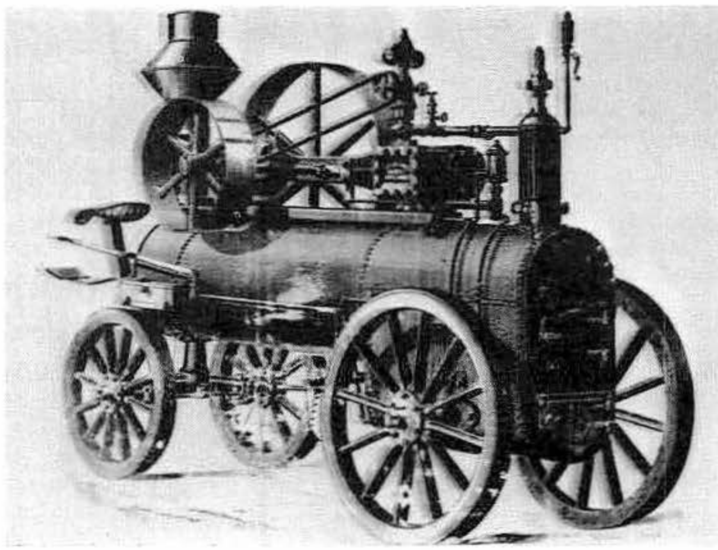


The Upton portable steam engine was built in 1890 by the Upton Mfg. Co. of Port Huron, Mich. It is on display at Greenfield Village, in the Henry Ford Museum, Dearborn, Mich. James Upton established the James Upton & Co. in 1861. The company was well-known in early Battle Creek, Mich. for various achievements, including the manufacture of the Michigan Sweep-Stakes threshing machines. Soon afterward, the company became the Upton Brown Co., and merged into a stock company known simply as the Upton Manufacturing Co., at which time it moved to Port Huron.

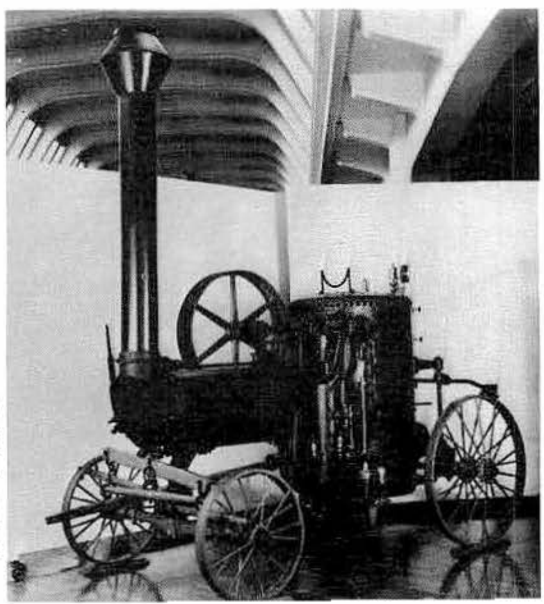
As a young boy, Henry Ford operated this 10 horsepower Westinghouse portable steam engine near the family's farm in Dearborn, Mich. It was built in 1882 by the Westinghouse Co. of Schenectady, N.Y. Henry Ford and President Harding, on some of their vacations, would go out looking for such engines, and have them shipped back to Dearborn for the museum that Ford was proposing at that time. Today, many of these engines are on display at the museum.

The Watertown was another engine manufacturer that provided two different sizes of flywheels in order to give operators a choice of ratios on the belt. A product of the Watertown Engine Co. of Watertown, N.Y., the engines also came equipped with a driver's seat and hand brake. The company won a medal from the new York State Agricultural Society for its portable steam farm engines, but while the company was among the first to build steam farm engines, it still went out of the picture before the turn of the century.





The S. W. Wood portable steam engine was built in 1890 by S. W. Wood and Son of Clyde, N.Y. It has a cast iron seat and was pulled by horses. Note the hand break by the side of the seat. It is on display at the Reynolds Museum. Sidney W. Wood and his family moved to Clyde, N.Y. in 1866 where he and his brother conducted the foundry and engine works of Clandler, Wood and Company. In 1867 the name was changed to S. W. Wood and Co. In 1886 the firm became S. W. Wood and Son.



The Monitor was a highly unusual portable steam engine built by the Ypsilanti Machine Works of Ypsilanti, Mich. The boiler looks like an attempt to combine upright and locomotive styles into one unit. The engine is a vertical affair, attached to the side of the rear boiler portion, with the piston at the bottom ad the crank and flywheel at the top. This engine is on display at the Henry Ford Museum.

Many Thanks

A six year search for a conclusive album with exact information on the North American steam traction engine could not have been completed without the constant encouragement of many traction engine owners, engineers, club officers, museum and foundation directors, directors, editors, government officials and friends. All of them are entitled to deep appreciation.

A special thanks must be extended to W. H. Eichhorn of the Allentown, Pa., Y.M.C.A. Camera Club; Roy Mitchells, Mr. & Mrs. Earnest Hoffer, Dave M. Egan, E. J. Murphy, Gene McLaughlin, Ken Lewis, William and George Van Natta, John Holp, Bob Willits, Leo Turley, Charles Harrison, Tom Webster, Lorna E. Krogstad, William U. Water, Jr., Mike Hubbard, Leroy W. Blaker, Hugh A. Hill, Amos B. Stauffer, C. Daniel Brubaker, Roland Woodward, Robert Lefever, Margaret L. Tyrrell, Library Director, and Loretta Moyer, Clerk of the Whitehall Township (Pa.) Public Library; Elmer K. Wenger, Jean P. Wesmer, Chief Librarian of the Schwab Memorial Library, Bethlehem Steel Corporation, Bethlehem, Pa., Helen Virden, Dale Fasnacht, Daniel Greene, Paul & Ruth Hahn, Elmer D. Lapp, S. D. Grizzle, William Johnson, Derroll E. Rhoderick, Mr. & Mrs. Green, Russell Figgins, Anthony T. Scalzo, Mr. & Mrs. D. F. Neal, Hyde Riddell, Lyle Opperman, Fred Bomberger of the Allentown Public Library, LeRoy F. Levine, William E. Hall, John Du-Puis, Donald Wack & Sons, Frank W. Knauf & Sons, Lawrence Headly, Mr. & Mrs. Barry W. Norbeck, James Steinback, Claude Wray & Sons, Floyd R. Johnston & Son, and Mr. & Mrs. Randalls.

Thanks are also due to Harold Hopkinson of Allis-Chalmers Corp.; Dean V. Kruse of Classic Auction Company; Donald B. Seem of White Motor Corp.; The Massey-Ferguson Limited; Peter H. Cousins of the Henry Ford Museum; The J. I. Case Co.; M. D. Husby of Caterpillar Tractor Co.; J. R. Elliot of Cooper Bessemer Co.; The Bell Telephone Co.; J. D. Henn of International Harvester Co.; Rey W. Brune of John Deere Co.; The Oliver Corp.; Harlan L. Conley of Anheuser Busch Inc.; Bay E. Zentmeyer of Commercial Photocopy Sales; and Memory House Photo Shop.

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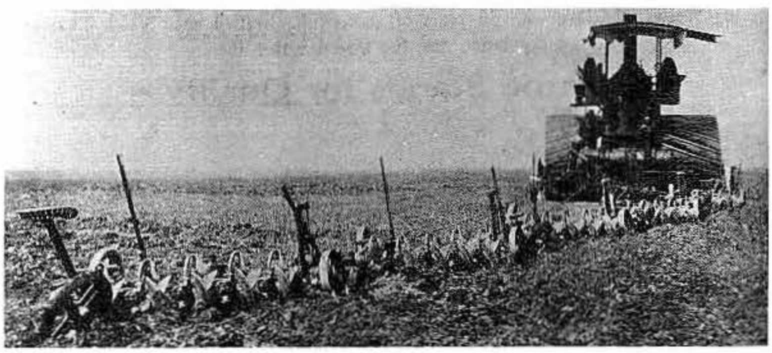

Also, the U.S. Department of Agriculture, Glenn Ellenberger, County Agent; Daniel Reuwee, director of information of Future Farmers of America; Mary Bedford, 4-H special assistant; Professors Lynn R. Glazier and Bill Wheeler, and the American Society of Agricultural Engineers. Also, a special thanks to Roland E. Burdick and O. E. Norbeck.

For this revised edition, special thanks go to Henry H. Clark; Al New; Al Herman; and Douglas McConnell. Also, to Chief Thomas W. McAlister, Valdez Fire Dept., Valdez, Alaska; Lt. Col. Lawrence Luvisi, Assistant Chief, Division of Fire, Louisville, Ky.; John A. Gould, Dawson Museum & Historical Society, Yukon, Canada; H. P. Zandbergen, White Farm Equipment Co.; Nicholas J. Mihalic, Union Fire Co. No. One, Belmar, N.J.; Jesse Hayden, Wissahickon Fire Co., Ambler, Pa.; Lt. George O. Boardman, Allentown Fire Co., Allentown, Pa.; Lt. Angelo Siciliano, Fire Prevention Division, Philadelphia, Pa.; John J. Robricht, historian, hand engine and steamer consultant, Philadelphia, Pa.; Bruce J. Metchall, Union Fire Co. No. One, Frenchtown, N.J.; Skip Phillips, Stroudsburg Fire Dept., Stroudsburg, Pa., and the Call-Chronicle newspaper, Allentown, Pa.

A special thanks must also be extended to Robert Lefever of Lancaster, Pa., for the use of his library of many steam traction engine manufacturers' catalogs, literature, threshing magazines and other antique periodicals relating to the steam engine field.

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About the author

The author's interest in and knowledge of the field of agriculture, particularly farm machinery, stems from his deep-rooted paternal and maternal ancestry. His paternal Swedish forefathers included an inquisitive schoolmaster, a minister, and a deep sea diver in the North Sea. His maternal German grandfather determinedly and steadfastly tilled the soil and left to his sons what is today a thriving and prosperous dairy farm in the rolling hills of Pennsylvania. Here, during many happy and exciting summers, the author gained first-hand knowledge of farm machinery.

The steam tractor captured his attention and imagination at an early age—while visiting area farm shows with his uncles. Since then, he has cultivated a wide personal contact with steam traction engine owners, exhibitors, early Americana museum curators, farm journal editors, agricultural college professors and farm agents, present-day tractor manufacturers, steam traction engine auctioneers and a voluminous year-round correspondence with officers and members of steam traction engine associations across the country.

He is well-known for his northeastern U. S. and Canadian slide talks on North American steam traction engines and work horses. His photo library contains one of the largest private collections of steam traction engines that operate today; plus a rare slide collection of horses working on farm lands today, particularly in the Pennsylvania Dutch country.

He is an active member of two steam traction engine associations, namely, Rough and Tumble Engineers Historical Assn. of Kinzer, Pa., and the Williams Grove Historical Steam Engine Assn. of Mechanicsburg, Pa.

He is a graduate of the University of Connecticut, Ratcliffe Hicks School of Agriculture, where he majored in Dairy Manufacturing.

In high school, he was a Short Wave Listener, collecting and winning 78 certificates from all over the world, plus trophy cups from England, South Africa and medals from France and Austria.

He is listed in the U. S. Gymnastics Federation *Who's Who In Gymnastics*. He won many medals for proficiency on the side horse while a member of the Lower Bucks YMCA Exhibition Gym Team in Bristol, Pa., continuing on during a three year stint on his high school gym team, and on through three years of successful competition in gymnastic champion meets and performing as an independent gymnast for the University of Connecticut. He climaxed his gymnastic career as a representative of the U. S. Army USAECB at the sixth annual Wisconsin Open Gymnastic Championship meet, winning his first Senior Men's first place on the side horse in Milwaukee, Wis., in 1965.

He has followed this rigid physical fitness program during the long arduous hours and days researching, photographing and compiling his encyclopedia of the steam traction engine in North America.

Visitors to the 1978 Rough & Tumble Engineers Historical Assn. show at Kinzer, Pa., inspect a Blizzard ensilage cutter No. 500. This particular piece of equipment was found by the author in 1977, at which time he purchased and restored the machine for an operating educational exhibit. By providing a method of preserving green feed for year-round use, the silo and ensilage cutter made one of the truly great contributions to modern livestock feeding. Running the cutter at this show is Samuel Kolva's Baker 23-90 HP steam traction engine, built in 1928.